

Final report

# Development of Airspace Design Principles for the Glasgow Airport FASI-North Airspace Change Proposal

CAP1616 Stage 1B Define Gateway Submission Document

Final report on airspace design principles engagement

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# 1. Introduction and background

Glasgow Airport (GLA) is developing an airspace change proposal (ACP) to upgrade the airport's arrival and departure routes. The ACP will cover a review of routes from the ground up to 7000ft and will also review the boundaries between controlled and uncontrolled airspace. GLA is following the regulatory process for changing airspace design, including community engagement requirements set out by the CAA in CAP1616.

## 1.1. Purpose

In developing the ACP, GLA must take into account feedback from relevant stakeholders. This report describes the outcomes of the stakeholder engagement conducted by GLA to develop and refine airspace design principles for its ACP (2019-46). The report forms part of the GLA submission to the Civil Aviation Authority (CAA) for the Define Gateway of the regulatory process for changing airspace design (CAP1616). The report aims to:

- Demonstrate how the engagement conducted by GLA has influenced the development of the design principles that the airport proposes to adopt for the ACP.
- Provide evidence that the conversations held with stakeholders have created a good understanding of the design considerations that are important to different stakeholder groups.
- Explain how the final list of proposed design principles forms a broadly accepted framework for evaluating airspace design options during Stage 2 of the ACP process.

## 1.2. Structure

The report is organised into six sections:

- Section 1 summarises the background to our ACP.
- Section 2 describes our engagement approach and the stakeholder groups that we invited to participate.
- Section 3 summarises the feedback offered by stakeholders during the first round of the engagement to gather issues and opportunities that should be considered when developing an initial list of design principles. Section 3 also explains how the initial list of potential design principles evolved in response to the first round of stakeholder feedback.
- Section 4 summarises the feedback offered by stakeholders during the second round of the engagement on the refined list of design principles and explains our rationale for adopting, discounting or consolidating potential design principles to create the final list for submission to the CAA.
- Section 5 summarises the outputs of The Consultation Institute's (TCI) independent assurance of the design principle engagement activities that we have conducted (the TCI's assurance is considered independent in the sense that the organisation did not participate in the engagement activities. GLA paid the TCI for the assurance services that they provided).
- Section 6 explains our conclusions and the expected next steps.

### 1.3. Background

#### **Glasgow Airport Overview**

GLA handled 9.7 million passengers in 2018, making it one of the busiest regional airports in the UK. A recent study by York Aviation calculated that the activities and connectivity associated with the airport support over 30,000 jobs and £1.44 billion of economic activity across Scotland.

With a 2,658m long runway and several jumbo aircraft parking stands, GLA is Scotland's leading long-haul airport, regularly handling the world's largest commercial aircraft, including the Emirates A380. Thirty airlines connect with over 120 worldwide destinations, including the hubs of London Heathrow (10 per day), Amsterdam (5 per day), Dubai (2 per day), Frankfurt, Munich, Dublin and Reykjavik.

GLA is an important freight hub, handling 16,000 tonnes of freight a year. This represents a four-fold increase in freight volumes over 10 years and is a trend that is expected to continue. Fifty-seven freight forwarders are located at the airport. Since 2014, GLA has been one of Europe's fastest growing airports, investing over £130 million in new and expanded infrastructure at no cost to public authorities. Forecasts predict that the airport will be handling 17 million passengers by 2040, and a £1 billion long term development strategy has recently been prepared to enable this growth.

#### **UK Airspace Modernisation**

The UK's airspace is some of the busiest in the world. The Department for Transport (DfT) has notified aviation stakeholders that, with the demand for aviation forecast to continue growing, delays and environmental impacts are expected to increase if the UK's airspace is not upgraded to introduce additional capacity. In response, the Government tasked the Civil Aviation Authority (CAA) to develop the UK Airspace Modernisation Strategy (AMS), which was published in December 2018 and describes the changes that the industry should make to meet the growing demand for aviation in a safe, efficient and environmentally sustainable way.

The overall programme of changes required to implement the AMS is considered one of the most significant airspace and air traffic management (ATM) developments ever undertaken. Some of the most important changes described in the AMS concern the widespread adoption of satellite-based navigation technology. This enhanced form of navigation (commonly known as Performance-based Navigation or PBN) enables arrival and departure routes to be re-designed with greater precision and flexibility. The UK has agreed to comply with European legal directives requiring the deployment of PBN routes in busy areas of controlled airspace such as the portions that support operations at larger commercial airports. The deployment of PBN routes at GLA, in line with the AMS and European legal directives, is one of the main drivers for our ACP and the reason for our participation in the FASI-North (Future Airspace Strategy Implementation – North) programme.

FASI-North is an initiative set out in the AMS that brings together several airports in Northern England and Scotland and NATS (the UK's en-route Air Navigation Service Provider) in a programme to re-design the airspace structure and route network. As part of the FASI-North Programme, GLA is responsible for implementing new PBN arrival and departure routes from the ground to 7000ft. We are also responsible for ensuring the

effective integration of our routes with those designed by the other FASI-North airports and with the wider re-design of the airspace across the region that is led by NATS.

The NATS led component of FASI-North (formerly known [by industry](#) as the PLAS (Prestwick Lower Airspace Systemisation) Programme) is focused on re-designing the airspace above 7000ft. The main goals of [FASI-N](#) are to introduce the additional network capacity and improve environmental performance to meet the objectives of the AMS. [FASI-N](#) and GLA's ACP also offers the opportunity to:

- **Enhance safety:** By reducing/removing safety risk factors from the current operation.
- **Better manage the impact of aircraft noise:** By deploying more precise and flexible routes that optimise aircraft performance, avoid noise sensitive areas and offer predictable relief.
- **Increase flight efficiency:** By tackling the inefficiencies in the current airspace that lead to aircraft flying longer tracks and sub-optimal climb and descent profiles thus offering environmental benefits.
- **Improve network performance:** By integrating GLA's routes with those of adjacent airports and the wider terminal airspace network in Scotland and Northern England.
- **Enable greater access to airspace for non-commercial users:** By introducing means to encourage airspace integration, rather than segregation.
- **Strengthen resilience:** By introducing additional network airspace capacity for redundancy in the event of disruption.
- **Optimise the performance of existing infrastructure** by configuring the airspace to deliver the most efficient use of existing runway capacity.

#### 1.4. Recent consultations regarding airspace change at GLA

In 2018, GLA conducted a 13-week consultation on proposals to modernise the flight paths used by aircraft travelling to and from Glasgow Airport, following the regulatory process for airspace change that the CAA required at the time (known as CAP725). The consultation concluded in April 2018 and generated a large quantity of valuable feedback from stakeholders about the proposed airspace design. However, during the consultation, GLA were informed by the CAA of a change in policy which would alter how our proposals would be taken forward. In August 2018, GLA informed participants in the consultation that this change in policy would involve a second consultation and engagement process.

GLA received a total of 2,312 responses to the 2018 consultation. The outputs of the 2018 consultation helped to shape GLA's approach to the Define Stage of the current CAP1616 process by providing insights into those stakeholder groups with a greater interest in airspace change and the major issues that should be considered when developing airspace design principles. The 2018 consultation outputs will continue to be taken into account as specific airspace design options are developed and assessed during Stage 2 and new proposals are consulted on in Stage 3 of the CAP1616 process.

As a result of their experience of the 2018 consultation, some of the stakeholders that participated in the design principle engagement for this ACP demonstrated a greater

awareness of key issues associated with the airspace change and offered well informed views on some of the potential options and constraints. We expect that the experience these stakeholders brought to the engagement has helped to strengthen the quality of the outputs created at this stage and will ultimately improve the airspace design options that are developed, appraised and refined during the later stages. However GLA fully recognises that CAP1616 is a different process, and that this ACP is a new proposal and fully separate from all previous airspace change projects. Therefore all stakeholders will be re-engaged fully and have the opportunity to feed into every stage.

### 1.5. Alignment with the CAP1616 process

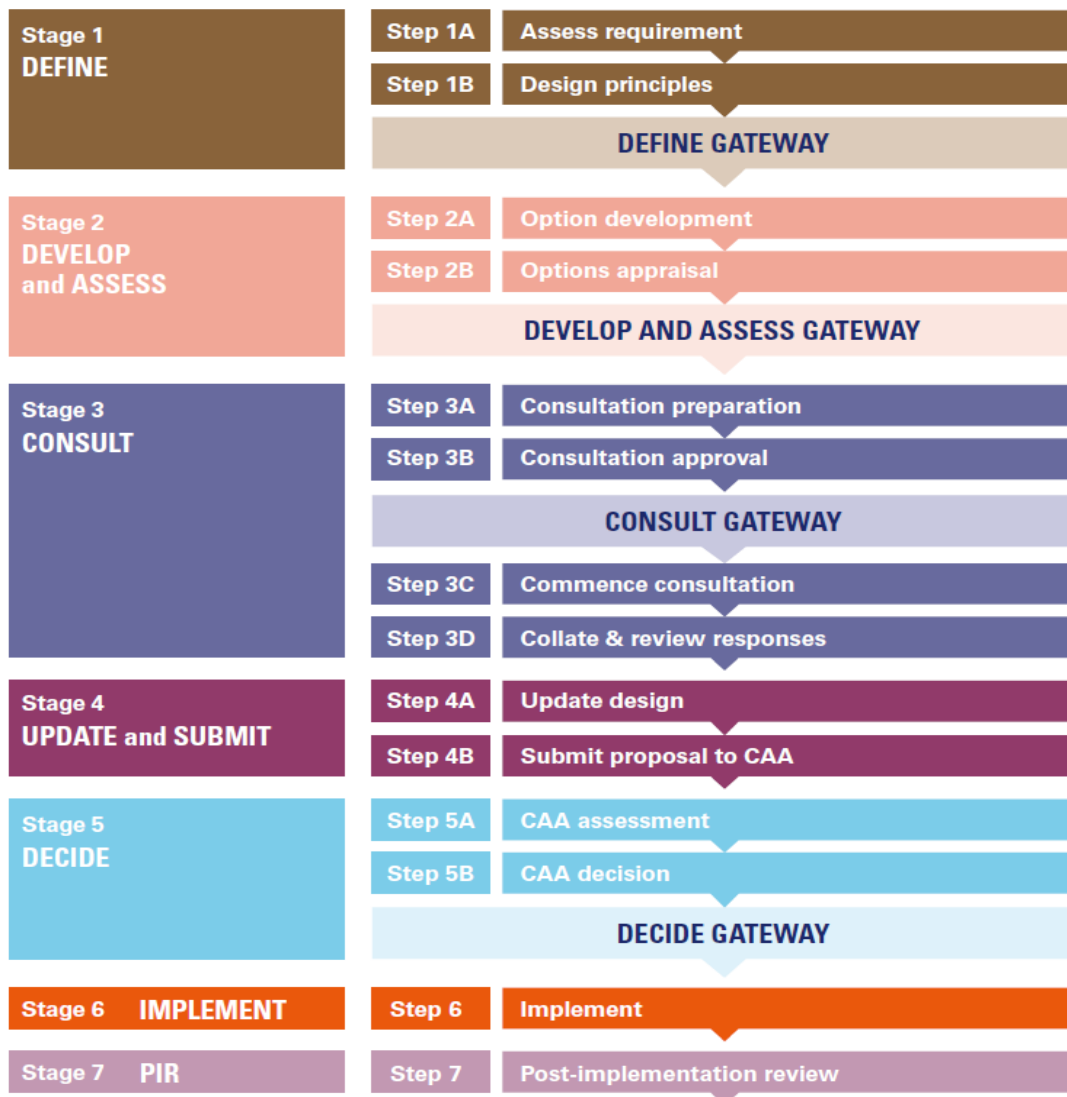
In December 2017 the CAA published CAP1616, “Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements”. The guidance sets out the process that all ACP sponsors must follow to make a permanent change to the published airspace design. The CAP1616 process is split into seven stages, illustrated in figure 1. We started the process at Stage 1A by submitting a Statement of Need (SoN) that describes the airspace issues and opportunities that GLA is seeking to address by sponsoring the ACP.

Stage 1B concerns the development and communication of airspace design principles to be applied to the ACP. We understand that our airspace design principles should encompass the safety, environmental and operational criteria and the strategic policy objectives that GLA is seeking to achieve in developing the ACP. We also recognise that the design principles must be drawn up through discussions with stakeholders at this early stage in the process. As part of the design principle development, we considered key government policy documents, including the DfT Aviation Strategy Green Paper, the AMS, Air Navigation Guidance 2017, and local factors, such as planning agreements, noise abatement arrangements relating specifically to GLA and some of the high level outputs from the 2018 ACP consultation (as explained in 1.4 above) that was halted due to a change in policy.

Once evaluated by the CAA, we expect our final list of proposed design principles to form a framework that we can use with stakeholders to consider and compare all the airspace design options available to address the issues and opportunities set out in the SoN.

The final list of airspace design principles that we propose to adopt for the ACP are set out in table 1. The principles are numbered for ease of reference. Design principle DP1, regarding the safety of commercial air transport and general aviation (GA) operations takes top priority, over all other principles. Subject to this overriding principle of maintaining a high standard of safety, the second highest priority principle for our ACP that cannot be discounted is that it accords with the published AMS (CAP 1711), any current or future plans associated with it and all other relevant policies and regulatory standards (DP15). Between DP1 and DP15, the other principles are not organised into a priority order. Where airspace design options may bring certain principles into conflict with one another, we will make trade-offs decisions based on an assessment of the overall impacts and two-way conversations with the affected stakeholders during stage 2 of the process.

Figure 1: Stages of the CAP1616 process





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**Table 1: Final list of airspace design principles that GLA propose to adopt for ACP 2019-46**

#	Airspace design principle
DP1	The airspace design and its operation must be as safe or safer than today.
DP2	Facilitate the growth in quicker, quieter and cleaner traffic by configuring the airspace to improve efficiency and meet the forecast demand for air transport.
DP3	Design the appropriate volume of controlled airspace to support commercial air transport, enable safe, efficient access for other types of operation and release controlled airspace that is not required.
DP4	Mitigate any future requirements for airborne holding for inbound traffic and holding on the ground pre-departure for outbound traffic.
DP5	Minimise the total adverse effects of aircraft noise and visual intrusion on physical and mental health and wellbeing.
DP6	Offer communities options for both noise concentration and noise dispersion through the use of predictable and transparent multiple route options and other respite methods that are possible within the technical ATC system, enroute network and procedural constraints.
DP7	The arrival and departure routes that serve Glasgow Airport below 7000ft should avoid noise sensitive areas and buildings, national parks, areas of outstanding natural beauty / <a href="#">National Scenic Areas</a> and areas that are not currently affected by aircraft noise.
DP8	Mitigate the impacts on local communities that are currently affected by aircraft noise on final approach or the vicinity of the immediate climb out, where overflight is unavoidable.
DP9	Reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.
DP10	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.
DP11	Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.
DP12	Minimise the growth in aircraft emissions, the further degradation in local air quality and adverse ecological impacts to address growing concerns about the impact of aviation on climate change.
DP13	Aircraft operating at Glasgow Airport should climb and descend continuously to / from at least 7000ft with a preference for the most environmentally beneficial option to be chosen if both cannot be achieved simultaneously.
DP14	Routes should be designed to meet a RNAV1 specification as a minimum in order to gain maximum benefit of the performance capabilities of the modern aircraft fleet operating at Glasgow Airport in line with the guidance provided in CAA CAP1385 on enhanced route spacing for PBN and provide sufficient resilience and redundancy against Global Navigation Satellite System (GNSS) failure.
DP15	The <a href="#">GLA ACP</a> accords with the CAA's published Airspace Modernisation Strategy (CAP 1711), any current or future plans associated with it and all other relevant policies and regulatory standards.

## 2. Design principle engagement approach

### 2.1. Summary of stakeholder groups invited to participate

Glasgow Airport is located in Paisley, Renfrewshire and is 8.6 nautical miles west of Glasgow city centre. As a result of its proximity to both urban and rural areas, GLA had to undertake a stakeholder mapping exercise to identify stakeholders that are affected by current airport operations and those that could be affected by any changes associated with an ACP. Given that we are at the design principle stage and are not able to predetermine any changes, we engaged with those who are currently impacted by GLA operations and selected a sample of those who could be affected by any future changes. In total those areas that are currently affected or have the potential to be affected by the ACP spanned some 13 local authority areas.

#### **Stakeholder identification**

The detailed guidance in Appendix C of CAP1616 sets out the expectation for stakeholder engagement at Stage 1B as follows:

*“Earlier in the process, as there will not be clarity on the precise impacts of a proposed change, it will be more challenging to identify potential audiences with whom to engage on this process. It is therefore likely that contact will primarily be with stakeholders’ representatives:*

- *community leaders;*
- *local authorities elected representatives;*
- *airport consultative committees;*
- *representative groups;*
- *governmental organisations;*
- *industry groups.*

*These will likely be a more informed audience and will often be people with whom the proposer has an ongoing relationship, helping to contextualise the engagement and developing proposal.”*

The CAA’s supporting Stakeholder Communications Analysis and Engagement Plan template document includes the following suggested categories and example sub-categories.

- *Local stakeholders – MPs, local authorities, airport consultative committees, parish councils, local pressure groups;*
- *Industry stakeholders – airlines, industry bodies, airports, MoD, others;*
- *General Aviation stakeholders - NATMAC/national bodies, local flyers, others;*
- *NGOs, trade groups, others.*

In forming our stakeholder selection, we have covered all of those referenced in both Appendix C and the indicative list in the CAA’s engagement plan template.

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Given the broad scope of communities currently / potentially affected by any future ACP we adopted the following approach to stakeholder selection:

- Involving representatives of communities currently affected by the flightpaths
- Involving representatives of communities that could be affected by future flight paths
- Proactively engaging the representatives of any relevant seldom heard/hard to reach including equalities groups
- Targeting interested parties and/or those with a willingness to engage through future phases as per CAP1616 guidance
- Qualifying participants to ensure we have the right representative

Stage 1B seeks to engage initially those with some prior knowledge of the airport, who can meaningfully feed into the development of the design principles *on behalf of those that they represent, which will include the general public*. The engagement strategy for Stage 1B (as distinct from the wider Consultation under Stage 3) focused on representative groups and stakeholders that can provide insight into the range of views of those they represent.

Given the potential number of communities that could be affected by a future ACP it was important to manage the number of individuals participating in any engagement activities to ensure effective and coherent discussions could take place. Therefore, in line with the Stage 1B guidance outlined above, GLA's stakeholder mapping process focused on identifying participants who would likely share common views and could represent particular perspectives.

To maximise participation GLA undertook a thorough stakeholder qualification process. To ensure we had identified the most appropriate person within an organisation and to verify their willingness to participate we proactively qualified all stakeholders via either telephone and / or email contact in advance of issuing invitations to the first round of workshops.

We wanted to ensure that the views of political policy-makers responsible for the 13 local authority areas were accounted for and each local authority was asked to nominate an appropriate person to represent their interest in this process.

In engaging with local community councils, we selected a representative sample of councils. These community councils were selected to ensure (1) representation amongst each local authority area, (2) are adjacent to the both the existing and any potential proposed new flightpath (3) are a mixture of urban/rural and affluent/less affluent areas.

We aimed to maximise the level of participation from stakeholders as part of this engagement through the following measures:

- A careful process of mapping stakeholders to supplement the existing information held by GLA and those involved in its existing consultative forums focused on normal operational issues.
- Qualified all those stakeholders initially identified to ensure the correct data was held.
- Initial invites issued via both email and post.

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- All invites were followed up by telephone contact – unavailable invitees were called to ask if they would like to nominate another representative.
- If an organisation which was representing a particular interest or viewpoint decided they did not want to take part, GLA then invited a similar organisation to represent this view (if there was sufficient time to organise).

Insights gained from the 2018 consultation were used as a check and balance in Stage 1B planning in both stakeholder selection and also in content of the engagement workshops. Key feedback from the 2018 consultation included:

- An emphasis on the importance of continuously improving in aviation safety;
- Concerns about the impacts of aircraft noise for those communities that are currently affected and those that may potentially be newly affected;
- Some support for changes to deliver a more equitable spread of noise disturbance and provide relief or respite to those who are affected all the time today;
- Agreement on the need for airspace modernisation and increased efficiency and that Glasgow Airport makes a vital contribution to the Scottish economy;
- Support for reductions in fuel burn and aircraft emissions.

These insights helped to shape our engagement methodology for the development of airspace design principles and were included in the discussion themes for the first round of workshops.

## 2.2. Overview of our engagement approach

### Methodology

Our approach to engaging stakeholders in two-way conversations to develop our design principles is based on the Inform, Listen and Adapt model suggested in the template guidance for an engagement strategy accompanying CAP1616, to:

- *Inform* stakeholders of the background, drivers, issues and opportunities associated with the ACP and the factors that might give rise to potential design principles.
- *Listen* to the feedback from stakeholders about the issues and opportunities and other factors that they think should be considered when developing and evaluating airspace design options.
- *Adapt* to demonstrate how stakeholder feedback has influenced the development and refinement of our airspace design principles.

Given the broad range of communities potentially affected by any future ACP it was important to develop an engagement strategy that ensured a wide range of representative feedback could be received in a manageable environment. It was important that the methodology employed also enabled participants of varying interests and levels of understanding could engage in the process equally.

To achieve this we decided that facilitating workshop style discussions with representatives of communities and organisations would allow us to understand the perspectives of a broad range of differing communities and stakeholders in a manageable and effective way.

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To further ensure GLA was able to fully understand and manage the feedback of a broad range of people / organisations it grouped stakeholders into the following categories based on their common background, knowledge and / or need:

- Aviation Stakeholders
- Local Government and Business Stakeholders
- Community Representatives and Interest Groups

### **Overview of engagement activities**

GLA's engagement featured two rounds of activities to ensure that participants had sufficient opportunity to help shape and refine the design principles. The two rounds included stakeholder workshops which sought to:

- In round 1 - Provide information on airspace change that should guide the decision-making process and start a discussion to gain any relevant input about design principles that should be adopted to guide the development and assessment of different airspace change options later in the process.
- In round 2 - Review and refine the initial set of draft design principle statements, which have been based on feedback from the initial round of engagement, share with stakeholders and seek further feedback prior to submission to the CAA.

During the first round of our engagement, we wanted to ensure that each stakeholder group was given the chance to outline their own initial views in a forum of stakeholders with a similar background, knowledge or need. In addition, it provided GLA with an opportunity to understand specific stakeholder needs and opinions.

As a result, round 1 focused on informing stakeholders and listening to their feedback over the course of three workshops – one with aviation stakeholders, another with local government and business stakeholders and a third with community representatives and interest groups.

The workshop participants were given a presentation outlining the drivers for changing our airspace that are set out in the UK AMS and an overview the regulatory process that all airspace change sponsors must follow.

Stakeholders were then presented with several themes related to airspace change to discuss in sub-groups. The aim of the sub-group discussions were to gather stakeholders' views about the main airspace design considerations associated with each theme, and to use that information in plenary to have conversations about the factors that are important for us to consider when developing an initial list of potential design principles.

Note takers from our engagement consultants were there to capture feedback from the sub-group discussions, whilst nominated representatives from each table reported back the main points raised by their table to the room.

The workshops took place on September 9th and 10th, 2019 at the Corinthian Club in Glasgow. We developed an initial list of potential design principles using the feedback gathered during round 1 and circulated it to all stakeholders, irrespective as to whether they attended the workshops, at the same time to provide equal opportunity to respond. This was sent out on September 16th, 2019. requesting feedback within a two-week window by September 27th, 2019.

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During the second round of our engagement, we felt it was necessary to mix all stakeholder categories together to see how their feedback around the potential design principle statements would interact with another stakeholder's interpretation of the same issues. Allowing dialogue between different stakeholders with differing needs in an open environment granted GLA the opportunity to understand how trade-offs may be necessary in the formulation of any design principle statements within this ACP, which should help in the next stage of the ACP process. It also allowed stakeholders to understand the needs of other stakeholder groups that they may not have been previously aware of. These two-way discussions amongst a mix of stakeholder groups will also provide helpful insights and understanding for the next stage of the process.

Round 2 consisted of two further workshops on 3rd and 4th October 2019, again at the Corinthian Club.

During the second round of engagement we presented the updated list of design principles that had been further evolved following the feedback provided between September 16th and 27th, 2019 remotely via the feedback forms. Participants were asked to review, refine and provide feedback on this updated list of design principles. The format of the workshops was the same as in Round 1 with table discussion sessions and feedback from nominated spokespersons.

Following this second round of workshops, these refined principles were circulated to all stakeholders for a second time on October 9th requesting any final feedback, including views on the relative priority of each principle against the list as a whole. Feedback for Stage 1B was asked to be returned by October 23<sup>rd</sup>, 2019.

### **Maximising stakeholder participation**

Stakeholders identified as part of the process were given the opportunity to provide feedback both remotely, via feedback forms, and face-to-face at workshops. GLA felt that giving stakeholders an equal platform to provide their views, whilst offering those who could not attend the workshops the opportunity to provide representative feedback, vital to our engagement process. Using these methods enabled GLA to bring every stakeholder with them along the journey of developing the statements upon which any future airspace design must adhere. The methods used were:

- Correspondence (letters and email) to all stakeholders explaining the engagement process and how they can participate
- Workshop materials
- Workshop outputs circulated to all stakeholders at the same time
- Feedback form regarding the design principles provided to all stakeholders following workshops to ensure an opportunity for remote input is provided consistent with face-to-face opportunity. Stakeholders were given two weeks to provide additional feedback remotely via email
- A dedicated GLA ACP email address to encourage remote feedback and freephone information line to encourage and coordinate correspondence
- Bilateral engagement between the sponsor and individual stakeholders

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- Feedback form that seek stakeholders' views on the engagement process itself (rather than the design principles themselves) circulated after the workshops with the aim to identify lessons for future engagements

All identified stakeholders continued to be engaged throughout the process irrespective as to whether they attended a workshop, this was achieved as follows:

- Non-attendees were provided with the same materials listed above at each engagement milestone as per attendees
- Non-attendees to the first round of workshops were still invited to participate in the second round of workshops
- Materials issued ensured that non-attendees still received the same information and background as those that attended a workshop to enable them to provide informed feedback

We contracted specialists in airspace change, air traffic management and stakeholder engagement to support us in preparation for and facilitation of all of the workshops and ensure that the outputs were recorded accurately. The materials we created to support the workshops were designed to be simple and accessible for all stakeholders to understand. All of the engagement material is available in Appendix B.

### **Responding to CAA feedback from previous ACP**

Glasgow Airport is owned by AGS Airports Ltd, who own Aberdeen (ABZ), Glasgow (GLA) and Southampton (SOU) Airports. SOU recently passed its Stage 1B define gateway, and learnings from that engagement have helped shape how GLA undertook its Stage 1B design principle engagement.

The CAA had the following feedback for consideration regarding SOU for its stage 2 activities:

- Suggest having one master stakeholder list (e.g. spreadsheet) to eliminate the risk of missing someone or not sending them the relevant documentation/material.
- Suggest sending all the supporting documentation/materials at once, thus providing the same response window for all stakeholders.
- Suggest considering how engagement activity can be concluded with all of the stakeholders, for example, correspondence outlining the results and next steps required.

GLA has ensured it has taken this learning forward in its engagement activities for Stage 1B.

## Workshops

Table 2 summarises the details of the workshops that we conducted during the two rounds of engagement and outlines the main stakeholder groups that were invited to participate in each forum.

**Table 2: Stakeholder groups invited to participate in each engagement workshop**

Workshop details	Stakeholder groups participating in the workshops
<p><b>Round 1, Workshop #1 Aviation stakeholders</b></p>	<p>We felt it was important to gather views from a wide range of aviation stakeholders that may be affected by the ACP. Invitations to workshop #1 were extended to representatives from:</p> <ul style="list-style-type: none"> <li>- Commercial air transport users operating at GLA</li> <li>- GA users operating in the airspace close to GLA</li> <li>- Neighbouring commercial and GA aerodromes</li> <li>- Military airspace users and aerodromes</li> <li>- Air Navigation Service Providers</li> <li>- The Emergency Services</li> </ul>
<p><b>Round 1, Workshop #2 Local government and business stakeholder groups</b></p>	<p>We felt that engaging with local councils would provide views from policymakers responsible for the communities who currently live below GLA flightpaths or who may be impacted by the changes proposed in the ACP. We also felt it was important to gather views from business and tourism groups with strong links to the local area. Invitations to workshop #2 were extended to representatives from:</p> <ul style="list-style-type: none"> <li>- Local councils</li> <li>- Community councils</li> <li>- Local health authorities</li> <li>- Glasgow City Council</li> <li>- Local business groups</li> <li>- Local tourism groups</li> </ul>
<p><b>Round 1, Workshop #3 Community representatives and interest groups</b></p>	<p>We felt that it was important to gather views from those who represent local community groups and countryside groups who could speak on behalf of the rural areas of the region. The environmental groups invited covered a wide range of interests, including climate change, air quality and local habitats. We also felt it was important to engage with local schools and stakeholders from the seldom heard, marginalised or vulnerable groups in the community to find out how they might be impacted by overflights.</p> <p>Invitations to workshop #3 were extended to representatives from:</p> <ul style="list-style-type: none"> <li>- Community groups</li> <li>- Seldom heard, marginalised or vulnerable groups</li> <li>- Tourism and Public Bodies</li> <li>- Environmental interest groups</li> <li>- Countryside interest groups</li> <li>- Local educational institutions</li> <li>- Environmental Protection Scotland</li> </ul>



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	- Trade Unions
<b>Round 2, Workshop #4 and #5</b>	All stakeholder representatives that were invited to engage in the previous workshops were invited to participate in one of two follow-up sessions. The objective of the follow-up sessions was to refine the updated list of potential design principles that we developed using the outputs from round 1 and gather additional feedback from stakeholders about how the principles might be prioritised.

### 2.3. Chronology of engagement activities

Table 3 sets out the chronology of the engagement activities conducted to develop our design principles. A full engagement log that records all forms of engagement between us and stakeholders during the course of the engagement is provided in Appendix A, with copies of all of the correspondence in Appendix B.

**Table 3: Chronology of engagement activities**

<b>Engagement activity</b>	<b>Date</b>
Previous airspace change consultation under CAP725.	January – April 2018
Qualifying calls	w/c 29 <sup>th</sup> July 2019
Invites issued for Round 1 workshop	w/c 12 <sup>th</sup> August 2019
Round 1 workshop reminders sent	w/c 26 <sup>th</sup> August 2019
Round 1 Stakeholder representative workshops #1, #2 and #3 held.	9 <sup>th</sup> & 10 <sup>th</sup> September 2019
Issued workshop materials and feedback forms from round 1 workshops, along with round 2 workshop invitations, to all stakeholders invited to participate in workshops #1, #2 and #3. Start of round 1 remote feedback window.	16 <sup>th</sup> September 2019
Round 2 workshop reminders sent	25 <sup>th</sup> & 26 <sup>th</sup> September 2019
Round 1 remote feedback deadline	27 <sup>th</sup> September 2019
Round 2 Stakeholder representative workshops #4 and #5 held.	3 <sup>rd</sup> & 4 <sup>th</sup> October 2019
Issued workshop materials and feedback forms from round 2 workshops to all stakeholders. Start of round 2 remote feedback window.	9 <sup>th</sup> October 2019
Stage 1B remote feedback deadline reminder sent.	16 <sup>th</sup> October 2019
Stage 1B remote feedback deadline	23 <sup>rd</sup> October 2019
Stage 1B submission to the CAA	1 <sup>st</sup> November 2019

## 3. Round 1: Initial design principle development

### 3.1. Round 1: Stakeholder representative workshops #1, #2 and #3

Three workshops were conducted in the first round of engagement with aviation organisations, local government and business representatives and local community and interest groups. The workshops took place on September 9th and 10th 2019 at the Corinthian Club in Glasgow. A full list of the workshop invitees and participants for each workshop is set out below in Tables 4, 5, 6 and 7. The objectives of the workshops in the first round of engagement were to:

- Increase the awareness and understanding among stakeholders about the need for airspace change and the process for bringing it about.
- Gain an understanding of what stakeholders believe are the main issues and opportunities connected with the use of airspace and any proposed changes.
- Gather insights from the stakeholders about the factors that should be considered when developing the airspace design principles.
- Establish a forum that can meet again in future stages of the airspace change process to compare and contrast potential airspace design options.

During the workshops, participants were given a presentation outlining the drivers for changing our airspace that are set out in the UK Airspace Modernisation Strategy (AMS) and an overview the regulatory process that all airspace change sponsors must follow.

Stakeholders were then presented with several themes related to airspace change to discuss in sub-groups. The aim of the sub-group discussions were to gather stakeholders' views about the main airspace design considerations associated with each theme, and to use that information in plenary to have conversations about the factors that are important for us to consider when developing an initial list of potential design principles.

Note takers from our engagement consultants captured feedback from the sub-group discussions, whilst nominated representatives from each table reported back the main points raised by their table to the room. The themes for discussion were:

- Safety
- Capacity
- Noise
- Airspace Access and Integration
- Flight Efficiency
- Use of Advanced Navigation Technology
- Other themes raised by stakeholders that are not adequately covered above

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**Table 4: Stakeholders invited to the round 1 workshops, #1, #2 and #3**

Aberdeen Airport	Engender	Prestwick Centre (NATS)
ACOG - Airspace Change Organising Committee	Environmental Protection Scotland	Prospect Union
Aer Lingus	Falkirk Council	QinetiQ
Air Canada (Rouge)	Federation of Small Businesses Scotland	Ramblers Scotland
Air Transat	FedEx	Renfrewshire Access Panel
Aircraft Owners and Pilots Association (AOPA)	Flybe	Renfrewshire Chamber of Commerce
Airfield Operators Group (AOG)	Friends of the Earth (Glasgow)	Renfrewshire Council
Airlines UK	Gama Aviation Ltd	Royal Northern & Clyde Yacht Club
Airport Operators Association (AOA)	General Aviation Alliance (GAA)	Royal Society for the Protection of Birds
Airspace4All	Glasgow Access Panel	Rutherglen Community Council
American Airlines	Glasgow Airport Consultative Committee	Ryanair
Argyll and Bute Council	Glasgow Chamber of Commerce	SCDI
Argyll and Bute Third Sector Interface	Glasgow City Council	Scotland's Charity Air Ambulance
Arran Community and Voluntary Service (CVS)	Glasgow Council for the Voluntary Sector (GCVS)	Scottish Ambulance Service
Association of Remotely Piloted Aircraft Systems UK (ARPAS-UK)	Glasgow Disability Alliance	Scottish Association for Mental Health
Aviation Environment Federation (AEF)	Glasgow Flying Club	Scottish Association of Social Work
BAe Systems	Glasgow Life	Scottish Autism
Banknock, Haggs and Longcroft Community Council	Glasgow Social Enterprise Network (GSEN)	Scottish Canals
Bearsden East Community Council	Greenock South West Community Council	Scottish Countryside Alliance
Bearsden North Community Council	Guild of Air Traffic Control Officers	Scottish Enterprise
Bearsden Primary School	Heavy Airlines	Scottish Environment Link
Bearsden West Community Council	Helensburgh Community Council	Scottish Human Rights Commission
Beith and District Community Council	Helicopter Club of Great Britain (HCGB)	Scottish Mountain Rescue
BEMIS	Heli offshore	Scottish Natural Heritage
Bishopbriggs Community Council	Heliscot	Scottish Passenger Agents' Association
Blue Air	Honourable Company of Air Pilots (HCAP)	Scottish Trades Union Congress
British Air Line Pilots' Association	Howwood Community Council	Scottish Wildlife Trust
British Airways	Independent Commission on Civil Aviation Noise	SEPA
British Balloon and Airship Club	Inverclyde Council	Signature Flight Support
British Business and General Aviation Association (BBGA)	Isle of Man CAA	South Lanarkshire Council

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British Gliding Association (BGA)	Jet2	St. Benedict's High School (Renfrewshire)
British Hang Gliding and Paragliding Association (BHPA)	Johnstone Community Council	Stepps and District Community Council
British Helicopter Association (BHA)	Killearn Community Council	Stewarton and District Community Council
British International Freight Association	Kirkintilloch Community Council	Stirling Council
British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo)	KLM	Stirlingshire Voluntary Enterprise
British Model Flying Association (BMFA)	Lanarkshire and Lothian Soaring Club	Strathaven Airport
British Parachute Association (BPA)	Leading Edge Flight Training (Glasgow)	Strathblane Primary School (Stirlingshire)
Cambuslang Community Council	Light Aircraft Association (LAA)	Swissport
CBI Scotland	Loch Lomond & The Trossachs National Park	The Enchanted Tree Nursery
CEMVO Scotland (ethnic minorities)	Loganair	The Royal Environmental Health Institute of Scotland
City of Glasgow College	Low Fare Airlines	Thomas Cook Airlines
Clyde Cruising Club	Lufthansa	Transport Scotland
Clydebank East Community Council	Mains Estate Residents' Association	TUI
Council for the Voluntary Sector Inverclyde	Menzies Aviation	UK Airprox Board (UKAB)
Council for Voluntary Sector (CVS) Falkirk	Military Aviation Authority	UK Flight Safety Committee
Cumbernauld Airport	Milngavie Council	Unite the Union
CVO East Ayrshire	Ministry of Defence - Defence Airspace and Air Traffic Management (MoD DAATM)	United
Dennistoun Community Council	National Trust for Scotland	United States Air Force Europe (3rd Air Force-Directorate of Flying (USAFE (3rd AF-DOF))
Department for Transport, Infrastructure and Connectivity	NATS	University of Glasgow
Diageo	Navy Command HQ	University of West of Scotland
Dykebar Hospital in Paisley	NHS Ayrshire & Arran	Uplawmoor Community Council
East Ayrshire Council	NHS Forth Valley	Virgin Atlantic
East Dunbartonshire Council	NHS Greater Glasgow	Visit Scotland
East Dunbartonshire Voluntary Action	NHS Lanarkshire	Voluntary Action East Renfrewshire
East Renfrewshire Council	North Ayrshire Council	Voluntary Action South Lanarkshire
Eastern	North Lanarkshire Council	Volunteer Glasgow
easyJet	Peel Ports	West Dunbartonshire Council
Edinburgh Airport	Police Scotland	West Dunbartonshire CVS
Emirates	PPL/IR (Europe)	Westjet
Engage Renfrewshire	Prestwick Airport	Wizzair

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**Table 5: Attendees at Workshop #1**

ACOG	Flybe	Light Aircraft Association
Airspace-4-All	Flybe	NATS FASI-N
Association of Remotely Piloted Aircraft Systems	Gama Aviation	NATS Prestwick Centre
Bristow Helicopters Ltd	Glasgow Flying Club	Ryanair
British International Freight Association	Glasgow Prestwick Airport	Scottish Aeronautics & Rocketry Association
British Parachute Association	Guild of Air Traffic Control Officers	Scottish Ambulance Service
Cumbernauld Airport	Independent Commission on Civil Aviation Noise	Scottish Passenger Agents' Association
easyJet	Jet2 and Airlines UK	Strathaven Airport
Edinburgh Airport	Lanarkshire and Lothian Soaring Club	Thomas Cook Airlines

**Table 6: Attendees at Workshop #2**

Bearsden East Community Council	Howwood Community Council	Office of Jo Swinson MP
Clydebank East Community Council	Inverclyde Council	Renfrewshire Council
Diageo	Milngavie Council	SCDI
East Ayrshire Council	NHS Ayrshire & Arran	Scottish Enterprise
East Dunbartonshire Council	NHS Greater Glasgow & Clyde	Stirling Council
Glasgow Airport Consultative Committee	North Ayrshire Council	Uplawmoor Community Council
Glasgow City Council		

**Table 7: Attendees at Workshop #3**

City of Glasgow College	Glasgow Third Sector Interface Network	Scottish Natural Heritage
Enchanted Nursery	Mains Estate Residents' Association	Unite the Union / Scottish Trade Union Congress
Environmental Protection Scotland	National Trust for Scotland	University of West Scotland
Friends of the Earth Scotland	Renfrewshire Access Panel	Voluntary Actions South Lanarkshire
Glasgow Access Panel	Royal Northern & Clyde Yacht Club	West Dunbartonshire CVS

Tables 8 to 14 summarise the feedback gathered from the discussions about each theme in the first round of engagement workshops. This includes any feedback that was assessed to be of relevance to the creation of an initial list of potential design principles for further refinement. Some stakeholders provided detailed feedback about the features of specific airspace design options that has been stored by GLA and will be incorporated at the start of Stage 2 of the CAP1616 process (Develop and Assess). The resulting initial list of potential design principles to either discount or further refine in discussion with stakeholders during the second round of engagement are set out in table 15.

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**Table 8: Round 1 feedback linked to the safety theme**

<i>Feedback</i>
1.1. Maintaining and enhancing aviation safety is the top priority and should be the overriding consideration when developing airspace design options for the new ACP.
1.2. New technologies and operating approaches should be considered that have the potential to enhance safety.
1.3. Risks to aviation safety should continue to be as low as reasonably practical following the airspace change.
1.4. There is a recognition from stakeholders that the airspace surrounding Glasgow airport has an excellent safety performance record and that airspace design options should not result in a degradation in that performance for any airspace user group.
1.5. Airspace design options with the potential to lower the actual height of aircraft above the ground (altitude above terrain rather than altitude above mean sea level) should be carefully considered from a safety assurance perspective.

**Table 9: Round 1 feedback linked to the capacity theme**

<i>Feedback</i>
2.1. Additional capacity is required to ensure greater global connectivity for Scotland by enabling more direct routes to more destinations.
2.2. The capacity required to accommodate freight that is transported by air now and in the future should be considered when developing airspace design options.
2.3. Additional capacity should be used to mitigate any future requirement for airborne holding of aircraft inbound to Glasgow airport.
2.4. The physical and mental health and wellbeing of local communities is an important consideration when assessing the impacts of introducing additional airspace capacity in the Glasgow region.
2.5. Any impact on the workload of employees brought about by increase in airspace capacity should be carefully considered by employers, although stakeholders recognised that this is not within the scope of the ACP.
2.6. Additional airspace capacity to accommodate the continued growth in demand for aviation does not seem compatible with the Scottish Government's recent response to the Global Climate Emergency.
2.7. Additional airspace capacity should be used to facilitate a reduction in aircraft emissions for traffic operating into and out of Glasgow Airport.
2.8. Additional airspace capacity should facilitate a reduction in the intensity of operations during more anti-social hours (e.g. the evening and night-time period), although stakeholders recognised that this is not within the scope of the ACP.
2.9. The controlled airspace needed to support additional capacity should be the minimum volume required to accommodate the forecast growth in demand for commercial air transport so that the impacts on other airspace users are manageable.

2.10. Flexible use airspace concepts and procedures should be considered to optimise the benefits of additional airspace capacity for all users.

**Table 10: Round 1 feedback linked to the noise theme**

<i>Feedback</i>
3.1. The noise impacts generated by the airspace design options should be compared consistently against a credible 2019 baseline as part of the ACP process.
3.2. The ACP process should identify noise sensitive areas and buildings and ensure the airspace design options prioritise their avoidance, including areas that are not currently overflown.
3.3. Assessments of the total adverse impacts of noise generated by different airspace design options should consider the broader effects on health and wellbeing caused by greater overflight of already underprivileged areas.
3.4. The airport should consider incentive mechanisms to encourage operators to adopt quieter aircraft (e.g. scaling runway charges based on noise and offering quieter aircraft more efficient routes), although stakeholders recognised that this is outside the scope of the ACP.
3.5. The airspace design options should enable commercial air transport operators to fly higher sooner on departure and stay higher for longer on arrival, thereby reducing noise impacts. Continuous climb and descent operations should be designed to / from a minimum of 7,000ft.
3.6. The improved climb and descent profiles should result in the base of controlled airspace being raised, allowing general aviation users to operate at higher altitudes underneath, thereby reducing noise impacts.
3.7. The airspace design options should consider ways to mitigate the effects of concentrating noise impacts around the centreline of a procedure because aircraft fly new performance-based navigation routes with greater precision.
3.8. Light pollution and vibrations are also considered to be external negative impacts of overflight at lower altitudes and should be incorporated into the impact assessment of different airspace design options along-side noise.
3.9. The airspace design options should include measures to offer local communities with predictable relief/respice from aircraft noise.
3.10.Noise respice measures that rely on the use of multiple route options, which are mutually exclusive and deployed at different times should be considered along-side the additional complexity that such arrangements may introduce into the operation.
3.11.Noise respice arrangements should be predictable and transparent for communities, airspace users and air traffic control so as to not create undue complexity.
3.12.Flexible use airspace structures and procedures should be considered as a potential means to better manage the impact of aircraft noise.
3.13.The airspace design options should incorporate the impact of overflying high terrain, where aircraft at the same altitude above mean sea level are closer to those on the ground.
3.14.There is an expectation that the intensity of aircraft noise events should reduce overtime due to the introduction of progressively quieter aircraft. The industry should continue to apply pressure on operators and manufacturers to encourage the development and adoption of quieter aircraft, although stakeholders recognised that this is outside the scope of the ACP.
3.15.Airspace design options should focus on the provision of predictable relief/respice from aircraft noise that reduces the frequency of noise events experienced by communities.

**Table 11: Round 1 feedback linked to the airspace access and integration theme**

<i>Feedback</i>
4.1. Airspace access and integration should be underpinned by transparency of all airspace users operating in the wider area, perhaps through means of electronic surveillance, although stakeholders recognised that this is outside the scope of the ACP.
4.2. Measures to enable airspace access and integration should be demonstrably as safe or safer than the current operation.
4.3. Measures to enable airspace access and integration should not be deployed at the expense of mitigations for the noise and emissions created by airspace users.
4.4. The airspace design options should be developed in close alignment with developments at adjacent airports and the en-route network.
4.5. Airspace design options should consider the mechanisms to protect commercial air transport operations in controlled airspace from drone activity.
4.6. There should be robust mechanisms established and overseen by the government or regulator that ensure the private owners of neighbouring airports work collaboratively for the overall good of the air transport network, passengers and communities.
4.7. The airspace design options should enable access to the airspace for Military operations and the Emergency Services.
4.8. The boundaries of controlled airspace should be simplified to mitigate against the risk of infringements and enable access for airspace users operating in uncontrolled airspace nearby.
4.9. Use of VFR crossing corridors should be considered as part of the airspace design options.
4.10. Some local community and business stakeholders expressed the view that the airspace should continue to be segregated and prioritised for commercial air transport operations, because the Scottish terminal airspace and airways network is a key part of the UK's transport infrastructure that supports travel, business, tourism and the wider economy.
4.11. The redesign of Glasgow Airports arrival and departure routes below 7,000ft should not be constrained by the NATS-led development of the terminal and airways network above 7,000ft.
4.12. Airspace design options should be cognisant of the impacts on the operations at nearby general aviation aerodromes.
4.13. General aviation operations should be considered as part of a holistic system of airspace usage that enable equitable access based on reasonable demand.

**Table 12: Round 1 feedback linked to the flight efficiency theme**

<i>Feedback</i>
5.1. The airspace design options should be compared consistently against a credible baseline of the emissions generated by the current operation in 2019.
5.2. A credible baseline for the air quality impacts created by the current operation is needed in order to compare different airspace design options consistently and transparently.



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- 5.3. The airspace design options should prioritise the deployment of shorter routes and more efficient climb and descent profiles where possible, consistent with the requirements to better management aircraft noise at lower altitudes.
- 5.4. There will be difficult trade-off decisions between minimising the impact of noise and minimising aircraft emissions. Government policy and the regulatory process offer some guidance, but decisions should be made with the input of local community stakeholders and environmental interest groups.
- 5.5. The airspace design options should enable queueing and airborne holding to be reduced by supporting new concepts like more accurate target times of arrival.
- 5.6. The airspace design options should consider the broader impacts on the ecology of the region and the effects on non-human life.
- 5.7. Flexible Use Airspace principles should be considered to optimise the efficiency of the airspace, for example some volumes of airspace could be released for other airspace users depending on whether the airport is operating on easterlies or westerlies.
- 5.8. A holistic assessment of the impact of emissions generated by surface transport to and from the Airport should be conducted as part of the overall development of the Airport, of which this airspace is a part.
- 5.9. If Scotland’s terminal airspace and wider airways structure in the enroute network is outdated it should be upgraded as a priority.
- 5.10. A representative from the United Kingdom raised an objection to the concept of deploying alternative airspace structures that are intended to deliberately mitigate the impacts on flight efficiency of legitimate industrial actions by air traffic controllers.

**Table 13: Round 1 feedback linked to the use of advanced navigation technology theme**

<i>Feedback</i>
6.1. The airspace design options should be based on an appropriate level of PBN specification for the aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against GNSS failure.
6.2. The airspace design options shall implement PBN departure and arrival procedures to increase predictability, reduce pilot and controller workload and maximise the benefits of tools that systemise the operation and improve the management of queues.
6.3. Use of RNAV Visual approaches should be considered to enable shorter final approaches to a wide number of operators during good weather conditions.

**Table 14: Round 1 feedback related to other themes**

<i>Feedback</i>
7.1. The new ACP should be considered a clean sheet design for the controlled airspace structure and departure and arrival routes that support operations at Glasgow Airport and accord with the published AMS and all current and future plans associated with it.
7.2. The material presented to stakeholders to support the engagement on design principles and (in due course) the assessment of airspace design options should be simple, accessible and jargon/acronyms should be kept a minimum.

The feedback from the first round of engagement workshops influenced the development of the initial list of potential design principles set out in table 15 that were used as a starting point for further refinement. The process for developing the initial list of potential design principles from the round 1 workshop feedback is summarised in the bullet points below:

- The feedback gathered during conversations at the first-round engagement workshops was organised into 58 distinct points, linked to each of the discussion themes, to be considered by the GLA airspace design team when developing an initial set of potential design principles.
- The airspace design team convened by GLA (including airspace technical specialists from Trax, communications and engagement specialists from BECG, environmental impact analysts from ARUP and the airport's own management and operational personnel) examined the round 1 workshop feedback first in their individual specialisms and then as a collective.
- The collective dialogue concentrated on creating potential design principle statements that address the related pieces of feedback in each theme.
- Through this dialogue the airspace design team concluded that:
  - Some feedback points relate directly to a potential principle and some points support several principles (as highlighted in table 15 these points were used to develop the initial list of 19 potential design principles for further refinement);
  - Others feedback points are specific interpretations of a broader principle; or
  - Relate to trade-off decisions because they support a specific approach to addressing a principle or consider the balance of impacts between potentially competing principles.

The initial list of 19 potential design principles generated from the feedback gathered during the first round of engagement is set out in table 15. The specific points of feedback that influenced the creation of each principle are included in brackets.

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**Table 15: Initial list of potential design principles created following the round 1 workshops**

#	<i>Initial list of potential design principles (related feedback points)</i>
1	The airspace design and its operation must be as safe or safer than today for all airspace users. (1.1 to 1.5, 4.2, 4.5, 4.8)
2	Enable the sustainable growth of quicker, quieter, cleaner traffic by configuring additional airspace capacity to meet the forecast demand for air transport. (2.1, 2.2, 2.7, 2.8, 5.1, 5.2, 5.4)
3	Additional airspace capacity should integrate effectively with the operations of nearby airports, the wider Scottish terminal network and other airspace users in uncontrolled airspace. (2.10, 4.4, 4.9, 4.11, 4.12, 5.7)
4	Minimise the volume of controlled airspace required to support commercial air transport operations and enable safe, efficient access for other airspace users. (2.9,
5	Mitigate any future requirement for airborne holding and queueing for arrival traffic. (2.3, 5.5)
6	Minimise, and where possible reduce, the total adverse effects of aircraft noise and visual intrusion on health and wellbeing. (3.1 to 3.4, 3.8, 3.13)
7	Offer communities predictable relief from aircraft noise through the use of multiple route options and respite routes. (3.7, 3.9, 3.10, 3.11, 3.12, 3.15)
8	Avoid noise sensitive areas and buildings. (3.2, 3.13)
9	Avoid overflight of areas that are currently not affected by aircraft noise. (3.2)
10	Mitigate the impacts on local communities that are currently affected by aircraft noise on final approach or the vicinity of immediate climb out where overflight is unavoidable. (3.3, 3.5)
11	Avoid introducing additional complexity and bottlenecks into controlled and uncontrolled airspace and contribute to a reduction in airspace infringements. (4.2, 4.8, 4.9, 4.12, 4.13)
12	Collaborate with other airports and NATS to ensure that the airspace design options are compatible with the wider programme of airspace change being coordinated by the FASI North programme as part of the AMS. (4.6, 4.11)
13	Deploy flexible use airspace concepts and procedures to enhance airspace integration where possible and appropriate. (4.7, 4.9, 5.7)
14	Minimise, and where possible, reduce aircraft emissions, the degradation in air quality and adverse ecological impacts. (5.1, 5.2, 5.6)
15	Deploy shorter routes and more efficient climb and descent profiles for arrival and departure procedures. (5.3)
16	Ensure that aircraft operating at Glasgow Airport climb and descend continuously to / from at least 7000ft. (5.3)
17	Deploy routes with an appropriate level of PBN specification for the aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against GNSS failure. (6.1, 6.2, 6.3)
18	The GLA ACP accords with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it. (7.1)
19	All materials presented to stakeholders to support the development of airspace design options should be simple, accessible and jargon and acronyms should be kept a minimum. (7.2)

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A summary report of the feedback gathered during the first round of engagement workshops and the initial list of potential design principles that were created from the feedback were circulated to all stakeholders on September 16th with a request to:

- Review the feedback summary and initial list of potential design principle statements produced from the output of the first round of workshops.
- Complete the draft design principle feedback form and return via [airspace@glasgowairport.com](mailto:airspace@glasgowairport.com) by Friday 27<sup>th</sup> September 2019.
- Confirm availability for the second round of engagement workshops.
- Complete an engagement feedback form that provides us with views on how the engagement process and areas that can be improved.

Stakeholders were requested to email [airspace@glasgowairport.com](mailto:airspace@glasgowairport.com) or telephone our freephone information line on 0800 298 7040 with any queries or comments.

The above material was also accompanied by a copy of the presentation that was given at the workshops, which had been drafted as such to ensure it provided enough context to those stakeholders who did not attend but wanted to provide feedback.

### 3.2. Round 1: Feedback provided remotely after the workshops

Stakeholders that attended the round 1 workshops, and those who were invited to participate but unable to attend, were given the opportunity to provide additional feedback remotely in writing on the issues and opportunities that should be considered when developing design principles and on the initial list of potential design principles. A copy of the materials presented at the workshop was circulated to all stakeholders after the workshop, along with feedback forms and instructions on how and when to offer additional views. Copies of the workshop material, feedback forms and instructions are included in Appendix B.

All stakeholders (whether they attended the workshop or not) were given a two-week window to provide feedback via the feedback forms provided, to ensure equal feedback opportunities where possible. Copies of the feedback forms are included in Appendix B.

Table 16 summarises the feedback provided by stakeholders remotely after the round 1 workshops and its influence on the initial list of potential design principles. This includes any feedback that was assessed to be of relevance to design principle formation. Some more detailed design related feedback was offered and it was deemed more appropriate to store this feedback to be reviewed in more detail during Stage 2 – Develop and Assess. Round 1 feedback was discussed at the round 2 workshops, and stakeholders were given the platform to discuss and feedback whether GLA’s considerations and replies to feedback received was appropriate.

**Table 16: Feedback provided remotely after the round 1 workshops and its influence on the initial list of potential design principles**

#	Initial Design Principles	Feedback points provided remotely following the round 1 workshops	Proposed update prior to the second round of engagement
1	The airspace design and its operation must be as safe or safer than today for all airspace users.	<ul style="list-style-type: none"> <li>- Consider a design principle that encourages the deployment of RNAV approaches for safety reasons.</li> <li>- Consider explicit reference to the safety implications of increasing the number of flight paths.</li> <li>- Consider explicit reference of the safety implications of increasing the number of flights.</li> <li>- Consider the safety impacts of flight path options in areas of higher terrain and in areas likely to attract birds (increasing the risk of bird strikes).</li> <li>- Airspace design options with the potential to lower the actual height above ground should be carefully considered from a safety perspective.</li> </ul>	No changes proposed because as part of the ACP process we will conduct a thorough safety assessment on the airspace design options that will incorporate all issues raised during the design principle engagement.
2	Enable the sustainable growth of quicker, quieter, cleaner traffic by configuring additional airspace capacity to meet the forecast demand for air transport.	<ul style="list-style-type: none"> <li>- The ‘capacity to meet forecast demand’ should be re-examined in the context of the recently announced Climate Change Emergency.</li> <li>- Suggest examining the assumptions that underpin current passenger growth forecasts that are a driver for the airspace change, especially in the context of increasing concerns about the impact of emissions on climate change.</li> <li>- There is an obvious tension between this principle about accommodating forecast demand and the recently announced climate change emergency.</li> </ul>	Proposed update <i>Enable the sustainable growth of quicker, quieter, cleaner traffic by configuring the airspace to meet the forecast demand for air transport and address growing concerns about the impact of emissions on climate change.</i>
3	Additional airspace capacity should integrate effectively with the operations of nearby airports, the wider Scottish terminal network and other airspace users in uncontrolled airspace.	<ul style="list-style-type: none"> <li>- Commercial air transport operations should not limit access for general aviation users.</li> <li>- Suggest rewording the principle to clarify the phrase ‘capacity should integrate effectively’.</li> </ul>	Proposed update <i>Options to introduce additional airspace capacity for Glasgow Airport should consider the potential impacts on the operations of nearby airports, the wider Scottish terminal network and other airspace users in uncontrolled airspace.</i>
4	Minimise the volume of controlled airspace required to support commercial air transport operations and enable safe, efficient access for other airspace users.	<ul style="list-style-type: none"> <li>- Options should minimise the use of controlled airspace and the numbers of arrival and departure routes.</li> <li>- Recognise that general aviation pilots often go on to become commercial flight crew and should be enabled/encouraged to access airspace to gain experience and train.</li> <li>- Highlight that the deployment of PBN routes is an opportunity to reduce the volume of controlled airspace and the need for general aviation users to consume ATC capacity.</li> <li>- Some existing volumes of controlled airspace surrounding Glasgow are not used and should be released as part of a ‘clean sheet approach’.</li> <li>- Support the ambition to minimise the volume of controlled airspace required as part of the airspace design options.</li> <li>- Highlight the requirement to continue the provision for airspace users to transit portions of controlled airspace, especially for the Military to meet operational and training objectives.</li> </ul>	Proposed update <i>Minimise the volume of controlled airspace needed to support commercial air transport operations, enable safe, efficient access for other airspace users and release controlled airspace that is not required.</i>

5	Mitigate any future requirement for airborne holding and queueing for arrival traffic.	<ul style="list-style-type: none"> <li>- Consider including ground holding on the airfield pre-departure into this principle.</li> <li>- Reference the role of airspace management tools and scheduling in mitigating airborne holding (in conjunction with airspace change)</li> </ul>	<p>Proposed update</p> <p><i>Mitigate any future requirements for airborne holding for inbound traffic and holding on the ground pre-departure for outbound traffic.</i></p>
6	Minimise, and where possible reduce, the total adverse effects of aircraft noise and visual intrusion on health and wellbeing.	<ul style="list-style-type: none"> <li>- Incorporate mental health and Include specialists in mental health in the engagement on airspace design options.</li> <li>- Heatherbank Park consider their circumstances are unique and that principles 6, 7 and 8 should attract a relatively higher priority where flight path options may affect their location.</li> <li>- Should consider the impacts on the most deprived areas and how social/health inequalities will be factored into decisions about the airspace change options.</li> <li>- The assessments of health impacts should be conducted by independent agencies to build trust in the results. The approach to assessing health and wellbeing should be clarified.</li> </ul>	<p>Proposed update</p> <p><i>Minimise, and where possible reduce, the total adverse effects of aircraft noise and visual intrusion on physical and mental health and wellbeing.</i></p>
7	Offer communities predictable relief from aircraft noise through the use of multiple route options and respite routes.	<ul style="list-style-type: none"> <li>- Minimising noise should be a priority, but specifically dispersion rather than concentration of noise.</li> <li>- Heatherbank Park consider their circumstances are unique and that principles 6, 7 and 8 should attract a relatively higher priority where flight path options may affect their location.</li> <li>- Consider explicitly the impact on communities during the night-time period, especially in the context of growing traffic levels.</li> <li>- Reference the potential for technical ATC system, enroute network and procedural constraints to limit the scope of this principle.</li> </ul>	<p>Proposed update</p> <p><i>Offer communities predictable relief from aircraft noise through the use of multiple route options and respite routes or methods that are possible within technical ATC system, enroute network and procedural constraints.</i></p>
8	Avoid noise sensitive areas and buildings.	<ul style="list-style-type: none"> <li>- Low level turns which necessitate overflight of sensitive areas should not be a design principle.</li> <li>- The options should not legitimize any existing violations for which aircraft are currently fined.</li> <li>- Heatherbank Park consider their circumstances are unique and that principles 6, 7 and 8 should attract a relatively higher priority where flight path options may affect their location.</li> <li>- The Douglas Academy (a center of excellence for young musicians) is identified as a noise sensitive building.</li> <li>- National Parks and Areas of Outstanding Natural Beauty should be included in this principle and reference to overflights below 7000ft (especially Kilpatrick Hills Local Landscape Area).</li> <li>- Should consider the noise impacts of flight paths over higher terrains.</li> </ul>	<p>Proposed update</p> <p><i>Flight paths below 7000ft should aim to avoid noise sensitive areas, buildings, national parks and areas of outstanding natural beauty.</i></p>
9	Avoid overflight of areas that are currently not affected by aircraft noise.	<ul style="list-style-type: none"> <li>- The impact of overflights on property prices should be considered as a design principle.</li> </ul>	<p>No changes proposed because the impact of overflights on property prices is one example of several potential effects of redistributing aircraft noise over new areas (that will be examined in more detail during Stage 2 and Stage 3) that are covered by this principle.</p>
10	Mitigate the impacts on local communities that are currently affected by aircraft noise on final approach or the vicinity of immediate climb out where overflight is unavoidable.	<ul style="list-style-type: none"> <li>- Recognise that more efficient climb and descent profiles are unlikely to reduce the noise impact of aircraft landing and taking off.</li> </ul>	<p>No changes proposed because the challenges associated with generating perceptible reductions in the impact of aircraft noise from more efficient climb and descent profiles (that will be examined in more detail during Stage 2 and Stage 3) does not change the principle that some form of mitigation for affected communities should guide the development of airspace design options.</p>
11	Avoid introducing additional complexity and bottlenecks into controlled and uncontrolled airspace and contribute to a reduction in airspace infringements	<ul style="list-style-type: none"> <li>- Airspace design options should consider the goal of maximising the flyable airspace around the Greater Glasgow area and potentially allowing a cross country route through the central belt.</li> <li>- Consider the impact that changes to controlled airspace may have on any adjacent uncontrolled airspace e.g. traffic funneling, caused as a result of any change, in the context of the requirements of other airspace users.</li> </ul>	<p>No changes proposed because the feedback points provided are specific examples that support the purpose of this principle.</p>

12	Collaborate with other airports and NATS to ensure the airspace design options are compatible with the wider programme of airspace change being coordinated by the FASI North programme as part of the AMS.	<ul style="list-style-type: none"> <li>- The re-design of Glasgow Airports arrival and departure routes below 7000ft should be designed in coordination between the Airport and NATS against agreed and fixed entry/exit points in the en-route network/airways.</li> <li>- Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to Flight Level 90.</li> </ul>	<p>Proposed update.</p> <p><i>Collaborate with other airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.</i></p> <p>Proposed new principle.</p> <p><i>Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to Flight Level 90.</i></p>
13	Deploy flexible use airspace concepts and procedures to enhance airspace integration where possible and appropriate.	<ul style="list-style-type: none"> <li>- Options should incorporate Flexible Use Airspace (FUA) concepts and wider use of electronic surveillance.</li> <li>- Consider options for the use of VFR corridors through controlled airspace to enhance integration.</li> </ul>	Propose removing principle because the content is a subset of principle #4.
14	Minimise, and where possible, reduce aircraft emissions, the degradation in air quality and adverse ecological impacts.	<ul style="list-style-type: none"> <li>- Local air quality is an important issue.</li> </ul>	<p>Proposed update.</p> <p><i>Minimise, and where possible, reduce aircraft emissions, the degradation in local air quality and adverse ecological impacts.</i></p>
15	Deploy shorter routes and more efficient climb and descent profiles for arrival and departure procedures.	<ul style="list-style-type: none"> <li>- Incorporated in DPs 2 and 16, suggest removing.</li> </ul>	Propose removing principle because the content is duplicated in principles 2 and 16.
16	Ensure that aircraft operating at Glasgow Airport climb and descend continuously to / from at least 7000ft.	<ul style="list-style-type: none"> <li>- Volumes of controlled airspace at lower altitudes in the Glasgow Airport control zone should be released as part of the airspace change.</li> <li>- Supportive of the principle but should recognise that where there is a potential conflict between achieving continuous climbs and continuous descents simultaneously that continuous climbs generate greater benefits and should take priority.</li> </ul>	<p>Proposed update.</p> <p><i>Ensure that aircraft operating at Glasgow Airport climb and descend continuously to / from at least 7000ft, with a preference for continuous climbs if both cannot be achieved simultaneously.</i></p>
17	Deploy routes with an appropriate level of PBN specification for the aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against GNSS failure.	<ul style="list-style-type: none"> <li>- Don't design to the lowest aircraft capability level. Consider the requirements of modern fleets that continue to evolve.</li> <li>- Airspace designs that are aligned to the lowest PBN capability risks introducing inefficiency and may lead to delays. The AMS refers to RNAV1 standards; recommend this principle is updated to reflect this.</li> </ul>	<p>Proposed update.</p> <p><i>Deploy routes with a level of RNAV1 specification that optimise the performance of the modern aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against GNSS failure.</i></p>
18	The GLA ACP accords with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	<ul style="list-style-type: none"> <li>- The options must clearly show how they align with the wider programme of UK airspace modernisation.</li> </ul>	No changes proposed because the feedback point is sufficiently aligned with the principle as stated.
19	All materials presented to stakeholders to support the development of airspace design options should be simple, accessible and jargon and acronyms should be kept a minimum.	<ul style="list-style-type: none"> <li>- The material that supported round on of the design principle engagement was too complex.</li> <li>- It is important that stakeholders are presented with a range of alternative airspace design options.</li> <li>- Information about the impacts of aircraft noise should be presented in a clear and transparent way.</li> </ul>	This principle does not relate directly to airspace design so propose it is removed, although the feedback regarding the simplicity, transparency and accessibility of the information provided will be retained as a principle guiding all future engagement and consultation materials.

## 4. Round 2: Refining the updated design principles

### 4.1. Overview of round 2 engagement

Two workshops were conducted in the second round of engagement with a mix of aviation organisations, local government and business representatives, and local community and interest groups. The workshops took place on October 3<sup>rd</sup> and 4<sup>th</sup> 2019 at the Corinthian Club in Glasgow. A full list of the organisations that participated in the workshops is set out in Appendix A.

The objectives of the second round of engagement workshops were to:

- Increase the awareness and understanding among stakeholders about the need for airspace change and the process for bringing it about.
- Gain an understanding of what stakeholders believe are the main issues and opportunities connected with the use of airspace and any proposed changes.
- Review and further refine or discount the updated list of design principle statements created following the first round of engagement workshops and feedback.
- Establish a forum that can meet again in future stages of the airspace change process to compare and contrast potential airspace design options.

A full list of the round 2 workshop invitees and participants for each workshop is set out below in Tables 17 to 19. During the workshops, participants were given a presentation outlining the drivers for changing our airspace that are set out in the UK AMS and an overview of the regulatory process that all airspace change sponsors must follow. Stakeholders were then presented with the initial list of potential design principles created following the first round of engagement and an explanation of the modifications made in response to the feedback provided by stakeholders during the feedback response period.

**Table 17: Stakeholders invited to Workshops #4 and #5**

Aberdeen Airport	Environmental Protection Scotland	QinetiQ
Aer Lingus	Falkirk Council	Ramblers Scotland
Air Transat	Federation of Small Businesses Scotland	Renfrewshire Access Panel
Aircraft Owners and Pilots Association (AOPA)	Flybe	Renfrewshire Chamber of Commerce
Airfield Operators Group (AOG)	Friends of the Earth	Renfrewshire Council
Airlines UK	Gama Aviation Ltd	Royal Northern & Clyde Yacht Club
AIRPAS-UK	General Aviation Alliance (GAA)	Royal Society for the Protection of Birds
Airport Operators Association (AOA)	Glasgow Access Panel	Rutherglen Community Council



Airspace Change Organising Group	Glasgow Airport Consultative Committee	Ryanair
Airspace for All	Glasgow Chamber of Commerce	SCDI
American Airlines	Glasgow City Council	Scotland's Charity Air Ambulance
Argyll and Bute Council	Glasgow Council for the Voluntary Sector (GCVS)	Scottish Aeronautics & Rocketry Association (SARA)
Argyll and Bute Third Sector Interface	Glasgow Disability Alliance	Scottish Ambulance Service
Arran Community and Voluntary Service (CVS)	Glasgow Flying Club	Scottish Association for Mental Health
Association of Remotely Piloted Aircraft Systems UK (ARPAS-UK)	Glasgow Life	Scottish Autism
Aviation Environment Federation (AEF)	Glasgow Social Enterprise Network (GSEN)	Scottish Canals
BAe Systems	Greenock South West Community Council	Scottish Council for Development and Industry
Banknock, Hags and Longcroft Community Council	Guild of Air Traffic Control Officers (GATCO)	Scottish Countryside Alliance
Bearsden East Community Council	Heavy Airlines	Scottish Enterprise
Bearsden North Community Council	Helensburgh Community Council	Scottish Environment Link
Bearsden Primary School (East Dunbartonshire)	Helicopter Club of Great Britain (HCGB)	Scottish Human Rights Commission
Bearsden West Community Council	Heli offshore	Scottish Mountain Rescue
Beith and District Community Council	Heliscot	Scottish Natural Heritage
BEMIS	Honourable Company of Air Pilots (HCAP)	Scottish Passenger Agents' Association
Bishopbriggs Community Council	Howwood Community Council	Scottish Trades Union Congress
British Airline Pilots Association (BALPA)	Independent Commission on Civil Aviation Noise	Scottish Wildlife Trust
British Airways (BA)	Inverclyde Council	SEPA
British Balloon and Airship Club	Isle of Man CAA	Signature Flight Support
British Business and General Aviation Association (BBGA)	Jet2	South Lanarkshire Council
British Gliding Association (BGA)	Johnstone Community Council	St. Benedict's High School (Renfrewshire)

British Hang Gliding and Paragliding Association (BHPA)	Killlearn Community Council	Steps and District Community Council
British Helicopter Association (BHA)	Kirkintilloch Community Council	Stewarton and District Community Council
British International Freight Association	Lanarkshire and Lothian Soaring Club	Stirling Council
British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo)	Leading Edge Flight Training (Glasgow)	Stirlingshire Voluntary Enterprise
British Model Flying Association (BMFA)	Light Aircraft Association	Strathaven Airfield
British Parachute Association (BPA)	Loch Lomond and the Trossachs National Park	Strathblane Primary School (Stirlingshire)
Cambuslang Community Council	Loganair	Swissport
CBI Scotland	Low Fare Airlines	The Enchanted Tree Nursery
CEMVO Scotland (ethnic minorities)	Main Estates Residents' Association	Thomas Cook Airlines
City of Glasgow College	Menzies Aviation	Transport Scotland
Clyde Cruising Club	Military Aviation Authority (MAA)	TUI
Clydebank East Community Council	Milngavie Council	UK Airprox Board (UKAB)
Council for the Voluntary Sector Inverclyde	Ministry of Defence - Defence Airspace and Air Traffic Management (MoD DAATM)	UK Flight Safety Committee (UKFSC)
Council for Voluntary Sector (CVS) Falkirk	National Trust for Scotland	Unite the Union
Cumbernauld Airport	NATS	United
CVO East Ayrshire	Navy Command HQ	United States Air Force Europe (3rd Air Force-Directorate of Flying (USAFE (3rd AF-DOF))
Dennistoun Community Council	NHS Ayrshire & Arran	University of Glasgow
Department for Transport, Infrastructure and Connectivity	NHS Forth Valley	University of the West of Scotland
Diageo	NHS Greater Glasgow	Uplawmoor Community Council
Dykebar Hospital in Paisley	NHS Lanarkshire	Virgin Atlantic
East Ayrshire Council	North Ayrshire Council	Visit Scotland
East Dunbartonshire Council	North Lanarkshire Council	Voluntary Action East Renfrewshire

East Dunbartonshire Voluntary Action	Office of Jo Swinson MP	Voluntary Action North Lanarkshire
East Renfrewshire Council	Peel Ports	Voluntary Action South Lanarkshire
easyJet	Police Scotland	Volunteer Glasgow
Edinburgh Airport	PPL/IR (Europe)	West Dunbartonshire Council
Emirates	Prestwick Airport	West Dunbartonshire CVS
Engage Renfrewshire	Prestwick Centre (NATS)	Westjet
Engender	Prospect Scotland	

**Table 18: Attendees at Workshop #4**

Bearsden East Community Council	National Trust for Scotland
Beith and District Community Council	NHS Greater Glasgow
Clydebank East Community Council	Office of Jo Swinson MP
easyJet	Police Scotland
Edinburgh Airport	Prestwick Airport
Glasgow Third Sector Interface Network	Scottish Council for Development and Industry
Guild of Air Traffic Control Officers	Scottish Enterprise
Light Aircraft Association	SPAA
Loganair	

**Table 19: Attendees at Workshop #5**

Airspace for All	Mains Estate Residents' Association
British Parachute Association	NATS FASI-N
East Dunbartonshire Council	NATS Prestwick Centre
Environmental Protection Scotland	Renfrewshire Council
Falkirk Council	Scottish Aeronautics & Rocketry Association (SARA)
Friends of the Earth	Scottish Natural Heritage
Glasgow Airport Consultative Committee	Strathaven Airport
Glasgow City Council	University of the West of Scotland
Inverclyde Council	Uplawmoor Community Council
Leading Edge Flight Training	Voluntary Action South Lanarkshire

Table 20 sets out the updated list of design principles that were offered up for consideration by stakeholders in the second round of workshops.

**Table 20: Design principles considered in the second-round workshops**

#	<i>Updated design principle statement</i>
1	The airspace design and its operation must be as safe or safer than today for all airspace users.
2	Enable the sustainable growth of quicker, quieter, cleaner traffic by configuring the airspace to meet the forecast demand for air transport and address growing concerns about the impact of emissions on climate change.
3	Options to introduce additional airspace capacity for Glasgow Airport should consider the potential impacts on the operations of nearby airports, the wider Scottish terminal network and other airspace users in uncontrolled airspace.
4	Minimise the volume of controlled airspace needed to support commercial air transport operations, enable safe, efficient access for other airspace users and release controlled airspace that is not required.
5	Mitigate any future requirements for airborne holding for inbound traffic and holding on the ground pre-departure for outbound traffic.
6	Minimise, and where possible reduce, the total adverse effects of aircraft noise and visual intrusion on physical and mental health and wellbeing.
7	Offer communities predictable relief from aircraft noise through the use of multiple route options and respite routes or methods that are possible within the technical ATC system, enroute network and procedural constraints.
8	Flight paths below 7000ft should aim to avoid noise sensitive areas, buildings, national parks and areas of outstanding natural beauty.
9	Avoid overflight of areas that are currently not affected by aircraft noise.
10	Mitigate the impacts on local communities that are currently affected by aircraft noise on final approach or the vicinity of the immediate climb out where overflight is unavoidable.
11	Avoid introducing additional complexity and bottlenecks into controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.
12	Collaborate with other airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.
13	Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to Flight Level 90.
14	Minimise, and where possible, reduce aircraft emissions, the degradation in local air quality and adverse ecological impacts.

15	Ensure that aircraft operating at Glasgow Airport climb and descend continuously to / from at least 7000ft, with a preference for continuous climbs if both cannot be achieved simultaneously.
16	Deploy routes with a level of RNAV1 specification that optimise the performance of the modern aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against GNSS failure.
17	The GLA ACP accords with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.

The design principles were grouped into several themes for attendees to discuss in sub-groups. Note takers from our engagement consultants were there to capture feedback from the sub-group discussions, whilst nominated representatives from each table reported back the main points raised by their table to the room. For each theme the sub-groups were asked to consider:

- The need to add to or amend the updated design principle statements covered in the theme;
- Additional design principle statements that might be added and existing statements that should be consolidated or removed;
- Which, if any, principles in the theme should attract a relatively higher or lower priority in the context of the overall list of principles and why;
- General agreement with the updated principle statements and any specific objections.

The themes used to group design principles for consideration in the sub-groups are set out below with the relevant design principles in brackets:

- Safety (1)
- Capacity (2, 3, 4, 5)
- Noise (6, 7, 8, 9, 10)
- Airspace Access and Integration (11, 12, 13)
- Flight Efficiency/Environmental (14, 15)
- Other themes that are not adequately covered above (16, 17)

Tables 21 to 26 summarise the feedback gathered during discussions at the round 2 workshops and proposed refinements. A full list of the refined design principles created from the second-round workshop feedback is set out in table 27.

**Table 21: Round 2 feedback on the design principle covered in the theme safety**

<i>Design principle</i>	<i>Feedback</i>
<p>1. The airspace design and its operation must be as safe or safer than today for all airspace users.</p>	<ul style="list-style-type: none"> <li>Stakeholders unanimously agreed that this design principle should attract the highest priority in the context of the list as a whole.</li> <li>Several stakeholders suggested removing the phrase ‘for all airspace users’ from the end of the statement because the airspace design and its operation must be as safe or safer than today for all affected stakeholders including passengers and the public.</li> </ul> <p><b>Refined principle: “The airspace design and its operation must be as safe or safer than today”</b></p>

**Table 22: Round 2 feedback on the design principles covered in the theme capacity**

<i>Design principle</i>	<i>Feedback</i>
<p>2. Enable the sustainable growth of quicker, quieter, cleaner traffic by configuring the airspace to meet the forecast demand for air transport and address growing concerns about the impact of emissions on climate change.</p>	<p>Stakeholders suggested:</p> <ul style="list-style-type: none"> <li>Changing the word ‘enable’ to ‘facilitate’.</li> <li>Adding a reference to improving efficiency as part of this principle.</li> <li>Removing the word ‘sustainable’ from this principle statement because it is subjective and ambiguous. Also, the words ‘quieter’ and ‘cleaner’ later in the statement are specific references to sustainability.</li> <li>Transferring the final part of the statement, ‘and address growing concerns about the impact of emissions on climate change’ to design principle 14.</li> <li>Stakeholders also suggested that the forecasts of future demand for air transport are examined again in the context of the recently announced climate emergency. The current forecasts are drawn from the latest Department for Transport modelling. Glasgow airport committed to provide feedback to the Department on the request for updated demand forecasts.</li> </ul> <p><b>Refined principle: “Facilitate the growth in quicker, quieter and cleaner traffic by configuring the airspace to improve efficiency and meet the forecast demand for air transport.”</b></p>
<p>3. Options to introduce additional airspace capacity for Glasgow Airport should consider the potential impacts on the operations of nearby airports, the wider Scottish terminal</p>	<p>Stakeholders suggested:</p> <ul style="list-style-type: none"> <li>Changing the phrase, ‘other airspace users’ to, ‘other aircraft in uncontrolled airspace’ to make the statement easier for a non-technical audience to understand.</li> </ul>

<p>network and other airspace users in uncontrolled airspace.</p>	<ul style="list-style-type: none"> <li>It was also recognised that the content of this design principle is now adequately covered in design principle #12, under the access and integration theme.</li> </ul> <p><b>Design principle removed because the content is covered in principle #12.</b></p>
<p>4. Minimise the volume of controlled airspace needed to support commercial air transport operations, enable safe, efficient access for other airspace users and release controlled airspace that is not required.</p>	<p>Stakeholders suggested:</p> <ul style="list-style-type: none"> <li>Replacing the phrase, 'minimise the volume of controlled airspace', with, 'design the appropriate volume of controlled airspace'.</li> <li>Changing the phrase 'other airspace users' to another term that is easier for a non-technical audience to understand.</li> </ul> <p><b>Refined principle: "Design the appropriate volume of controlled airspace to support commercial air transport, enable safe, efficient access for other types of operation and release controlled airspace that is not required."</b></p>
<p>5. Mitigate any future requirements for airborne holding for inbound traffic and holding on the ground pre-departure for outbound traffic.</p>	<ul style="list-style-type: none"> <li>Stakeholders highlighted that airborne holding is largely an issue for the enroute airspace above 7,000ft where the responsibility for making changes sits with NATS rather than Glasgow Airport.</li> <li>No additional changes to the design principle statement were suggested by stakeholders following the updates from the first round of engagement and feedback</li> </ul> <p><b>Design principle retained as currently drafted.</b></p>

**Table 23: Round 2 feedback on the design principle covered in the theme noise**

<i>Design principle</i>	<i>Feedback</i>
<p>6. Minimise, and where possible reduce, the total adverse effects of aircraft noise and visual intrusion on physical and mental health and wellbeing.</p>	<ul style="list-style-type: none"> <li>Stakeholders suggested removing the phrase 'and where possible reduce' because it is considered unnecessary in the context of the statement as a whole.</li> <li>Stakeholders also highlighted the need for careful trade-off decisions during the options development stage to strike the right balance between design principle #6 and design principle #7 regarding the provision of predictable relief from aircraft noise using multiple respite routes/methods.</li> </ul> <p><b>Refined principle: "Minimise the total adverse effects of aircraft noise and visual intrusion on physical and mental health and wellbeing."</b></p>
<p>7. Offer communities predictable relief from aircraft noise through the use of multiple route options and respite</p>	<ul style="list-style-type: none"> <li>Stakeholders highlighted that this principle advocates the dispersion of aircraft noise impacts, which may be appropriate for some airspace design options, but they also suggested that there may be airspace design options</li> </ul>

<p>routes or methods that are possible within the technical ATC system, enroute network and procedural constraints.</p>	<p>where the concentration of noise impacts could also be desirable, and that communities should be offered options that incorporate both concepts.</p> <p><b>Refined principle: “Offer communities options for both noise concentration and noise dispersion through the use of multiple routes and other respite methods that are possible within the technical ATC system, enroute network and procedural constraints.”</b></p>
<p>8. Flight paths below 7000ft should aim to avoid noise sensitive areas, buildings, national parks and areas of outstanding natural beauty.</p>	<p>Stakeholders suggested:</p> <ul style="list-style-type: none"> <li>• Clarifying that the phrase ‘flight paths’ refers to commercial air transport routes operating in controlled airspace, not the tracks of other aircraft operating below 7000ft in uncontrolled airspace.</li> <li>• National parks and areas of outstanding natural beauty are covered within the phrase ‘noise sensitive areas’ and can be removed from the design principle statement.</li> <li>• The content of design principle #9 regarding areas that are currently not affected by noise should be incorporated into this principle.</li> </ul> <p><b>Refined principle: “The arrival and departure routes that serve Glasgow Airport below 7000ft should aim to avoid noise sensitive areas, buildings, national parks, areas of outstanding natural beauty and areas that are not currently affected by aircraft noise.”</b></p>
<p>9. Avoid overflight of areas that are currently not affected by aircraft noise.</p>	<ul style="list-style-type: none"> <li>• Stakeholders suggested incorporating the content of design principle #9 as an additional component of the design principle #8 statement (as above).</li> </ul> <p><b>Content incorporated into design principle #8</b></p>
<p>10. Mitigate the impacts on local communities that are currently affected by aircraft noise on final approach or the vicinity of the immediate climb out where overflight is unavoidable.</p>	<ul style="list-style-type: none"> <li>• Stakeholders agreed with this design principle as stated, based on the first round of engagement.</li> </ul> <p><b>Design principle retained as currently drafted.</b></p>

**Table 24: Round 2 feedback on the design principles covered in the theme access and integration**

<i>Design principle</i>	<i>Feedback</i>
<p>11. Avoid introducing additional complexity and bottlenecks into controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.</p>	<ul style="list-style-type: none"> <li>• Stakeholders considered the ambition to ‘avoid introducing additional complexity and bottlenecks’ was too negative as currently described and a more positive statement would be to ‘reduce complexity and bottlenecks in controlled and</li> </ul>



	<p>uncontrolled airspace and contribute to a reduction in infringements.’</p> <p><b>Refined principle: “Reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.”</b></p>
<p>12. Collaborate with other airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.</p>	<ul style="list-style-type: none"> <li>Stakeholders suggested the clarification of the requirement for collaboration is with other ‘Scottish’ airports.</li> </ul> <p><b>Refined principle: “Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.”</b></p>
<p>13. Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to Flight Level 90.</p>	<ul style="list-style-type: none"> <li>Stakeholders considered that this design principle statement is too definitive, especially regarding the reference to/from Flight Level 90.</li> <li>Stakeholders agreed with the ambition that underpins this design principle but considered the statement to be a specific sub-set of design principle #12 and therefore adequately covered above.</li> <li>Glasgow Airport have decided to retain the specific principle to demonstrate a clear alignment with Edinburgh Airport that will publish a related design principle as part of their FASI North ACP.</li> </ul> <p><b>Design principle retained as currently drafted.</b></p>

**Table 25: Round 2 feedback on the design principles covered in the theme flight efficiency / environment**

<i>Design principle</i>	<i>Feedback</i>
<p>14. Minimise, and where possible, reduce aircraft emissions, the degradation in local air quality and adverse ecological impacts.</p>	<p>Stakeholders suggested:</p> <ul style="list-style-type: none"> <li>Removing the phrase ‘and where possible reduce’ because it is considered unnecessary in the context of the statement as a whole.</li> <li>Considering changing the word ‘minimise’ to ‘prevent’ (this suggestion has not been adopted because it is considered beyond the scope of the ACP to ‘prevent’ the growth in emissions, although airspace designs can be configured to minimise the growth).</li> <li>Including reference to the ‘further degradation’ in local air quality.</li> <li>Adopting the final part of the design principle #2 statement, ‘to address the growing concerns about the impact of aviation on climate change’.</li> </ul>

	<p><b>Refined principle: “Minimise the growth in aircraft emissions, the further degradation in local air quality and adverse ecological impacts to address growing concerns about the impact of aviation on climate change.”</b></p>
<p>15. Ensure that aircraft operating at Glasgow Airport climb and descend continuously to / from at least 7000ft, with a preference for continuous climbs if both cannot be achieved simultaneously.</p>	<ul style="list-style-type: none"> <li>Stakeholders suggested re-considering use of the word ‘ensure’ which implies that this design principle is mandatory and therefore attracts a higher priority than other principles.</li> </ul> <p><b>Refined principle: “Aircraft operating at Glasgow Airport should climb and descend continuously to / from at least 7000ft, with a preference for continuous climbs if both cannot be achieved simultaneously.”</b></p>

**Table 26: Round 2 feedback on the other design principles not covered in the themes above**

<i>Design principle</i>	<i>Feedback</i>
<p>16. Deploy routes with a level of RNAV1 specification that optimise the performance of the modern aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against GNSS failure.</p>	<ul style="list-style-type: none"> <li>Stakeholders suggested that the design principle statement should include the phrase ‘RNAV1 specification or better’.</li> <li>The acronym GNSS should be spelt out in full.</li> </ul> <p><b>Refined principle: “Routes should be designed to meet a RNAV1 specification as a minimum in order to gain maximum benefit of the performance capabilities of the modern aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against Global Navigation Satellite System (GNSS) failure.”</b></p>
<p>17. The GLA ACP accords with the CAA’s published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.</p>	<p>Stakeholders suggested that:</p> <ul style="list-style-type: none"> <li>The GLA ACP must accord with all relevant policies and regulatory standards, not only those captured in the published Airspace Modernisation Strategy. The design principle statement should be updated to reflect this point.</li> <li>Reference to ‘future plans’ should be removed from the design principle statement because stakeholders have no knowledge of future plans.</li> </ul> <p><b>Refined principle: “The GLA ACP accords with the CAA’s published Airspace Modernisation Strategy (CAP 1711), any current or future plans associated with it and all other relevant policies and regulatory standards.”</b></p>

**Table 27: Refined list of design principles following the round 2 workshops**

#	<i>Design principle statement</i>
1	The airspace design and its operation must be as safe or safer than today.
2	Facilitate the growth in quicker, quieter and cleaner traffic by configuring the airspace to improve efficiency and meet the forecast demand for air transport.
3	Design the appropriate volume of controlled airspace to support commercial air transport, enable safe, efficient access for other types of operation and release controlled airspace that is not required.
4	Mitigate any future requirements for airborne holding for inbound traffic and holding on the ground pre-departure for outbound traffic.
5	Minimise the total adverse effects of aircraft noise and visual intrusion on physical and mental health and wellbeing.
6	Offer communities options for both noise concentration and noise dispersion through the use of multiple routes and other respite methods that are possible within the technical ATC system, enroute network and procedural constraints.
7	The arrival and departure routes that serve Glasgow Airport below 7000ft should aim to avoid noise sensitive areas, buildings, national parks, areas of outstanding natural beauty and areas that are not currently affected by aircraft noise
8	Mitigate the impacts on local communities that are currently affected by aircraft noise on final approach or the vicinity of the immediate climb out, where overflight is unavoidable.
9	Reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.
10	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.
11	Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to Flight Level 90.
12	Minimise the growth in aircraft emissions, the further degradation in local air quality and adverse ecological impacts to address growing concerns about the impact of aviation on climate change.
13	Aircraft operating at Glasgow Airport should climb and descend continuously to / from at least 7000ft, with a preference for continuous climbs if both cannot be achieved simultaneously.
14	Routes should be designed to meet a RNAV1 specification as a minimum in order to gain maximum benefit of the performance capabilities of the modern aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against Global Navigation Satellite System (GNSS) failure.
15	The <a href="#">GLA ACP</a> accords with the CAA's published Airspace Modernisation Strategy (CAP 1711), any current or future plans associated with it and all other relevant policies and regulatory standards.

#### 4.2. Round 2 feedback provided remotely after the workshops

Following the second round of workshops, all stakeholders were given the opportunity to provide additional feedback remotely on the evolved list of design principles.

A copy of the materials presented at the workshop and the evolved list of design principles were circulated to all stakeholders 9th October 2019, along with a feedback form asking stakeholders to consider:

- If they were comfortable with the wording within the proposed design principles and if not, to indicate what they would like to see amended.
- If there were any additional design principles that they would like to see included.
- Which of the design principles they would categorise as a high, moderate or low priority in the context of the overall list of principles and why - stressing that they may choose not to provide priority to any of the listed design principles, if they so wished.

All stakeholders were given a two-week window to provide feedback via the feedback forms provided (deadline 23rd October 2019), to ensure equal feedback opportunities where possible. Copies of the feedback forms are included in Appendix B.

Again, to ensure all those that did not attend the workshops continued to have the opportunity to provide feedback remotely, a copy of the presentation accompanied the above information.

Table 28 summarises the feedback provided by stakeholders remotely after the second round of workshops and its influence on potential design principles.

### 4.3 Round 2: Feedback provided remotely after the workshops

Stakeholders that attended the round 2 workshops, and those who were invited to participate but unable to attend, were given the opportunity to provide additional feedback remotely in writing on the issues and opportunities that should be considered when developing design principles and on the initial list of potential design principles. A copy of the materials presented at the workshop was circulated to all stakeholders after the workshop, along with feedback forms and instructions on how and when to offer additional views. Copies of the workshop material, feedback forms and instructions are included in Appendix B.

All stakeholders (whether they attended the workshop or not) were given a two-week window to provide feedback via the feedback forms provided, to ensure equal feedback opportunities where possible. Copies of the feedback forms are included in Appendix B.

Table 28 summarises the feedback provided by stakeholders remotely after the round 2 workshops and its influence on the design principles. This includes any feedback that was assessed to be of relevance to design principle formation. Some more detailed design related feedback was offered and it was deemed more appropriate to store this feedback to be reviewed in more detail during Stage 2 – design.

**Table 28: Feedback provided remotely after the round 2 workshops and its influence on the refined list of design principles**

#	Initial Design Principle	Feedback	Proposed update
1	The airspace design and its operation must be as safe or safer than today.	<ul style="list-style-type: none"> <li>- The Mains Estate Residents Association (MERA) fully supports this design principle and wishes to reiterate that the design process must consider the safety impacts of flight path options in (i) areas of higher terrain, and (ii) areas likely to attract birds (increasing the risk of bird strikes).</li> <li>- The final design principles must reflect the latest CAA guidance and the source UK Department of Transport, Air Navigation Guidance (2017), page 11, which states that: “the CAA should ensure that the aviation industry takes account of the elevation (height) of the specific surface level involved when developing its airspace design proposals. This is particularly the case when such proposals may affect airspace at an altitude lower than 7,000 feet (amsl) and in circumstances where the actual height of the land directly beneath may be hundreds of feet above sea level”. We retain our position that airspace design options with the potential to lower the actual height of aircraft above the ground (altitude above terrain rather than altitude above mean sea level) should be carefully considered from a safety assurance perspective. (Uplawmoor Community Council)</li> </ul>	<p>No further update proposed because the feedback points endorse the principle as stated and offer specific guidance on important aspects that should be included in the safety assurance process that will be followed as the ACP process progresses, in order to meet this principle.</p> <p>During the first round of the design principle engagement that this ACP is considered a Level 1 proposal because the airspace designs have the potential to create noise impacts below 7000ft.</p>
2	Facilitate the growth in quicker, quieter and cleaner traffic by configuring the airspace to improve efficiency and meet the forecast demand for air transport.		No specific feedback received regarding additions or amendments to this principle.
3	Design the appropriate volume of controlled airspace to support commercial air transport, enable safe, efficient access for other types of operation and release controlled airspace that is not required.	<ul style="list-style-type: none"> <li>- Without good controlled airspace the operations of an airport can be severely restricted and capacity limited. This could limit commercial operations and international trade, forcing imports and exports of freight to be handled elsewhere. The introduction of measures to assist with the climate emergency may influence the availability of additional air capacity in the future. The supply chain may change as a result. (BIFA)</li> <li>- Sponsors should be encouraged to review existing controlled airspace and where practicable reduce or remove under-utilized airspace, in recognition of the fact that the current scale of controlled lower level airspace has grown disproportionately and without adequate control, principally to accommodate now obsolete equipment and procedures. (LAA)</li> </ul>	No changes proposed because the feedback points are sufficiently aligned with the principle as stated.
4	Mitigate any future requirements for airborne holding for inbound traffic and holding on the ground pre-departure for outbound traffic.	<ul style="list-style-type: none"> <li>- It is unclear to NATS how airborne holding can be mitigated against an unknown design and airport schedule. It should be documented that Glasgow Airport is part of the wider Scottish TMA therefore NATS will continue to develop airspace and manage capacity based on the requirements of the airspace users. (NATS)</li> </ul>	No further updates proposed, although GLA recognise the uncertainty regarding the availability of methods to mitigate airborne holding as this stage in the ACP process when the potential airspace design options are unknown.
5	Minimise the total adverse effects of aircraft noise and visual intrusion on physical and mental health and wellbeing.	<ul style="list-style-type: none"> <li>- There is existing research which has found a link between aircraft noise and cardiovascular disease therefore the local communities want research conducted before this expansion to ensure their health will not be compromised any further. (Clydebank East CC)</li> </ul>	No further updates proposed. GLA are required to conduct an assessment of the health impacts of aircraft noise during the airspace design options appraisals to be conducted during Stages 2 and Stages 3.

6	<p>Offer communities with options for both noise concentration and noise dispersion through the use of multiple routes and other respite methods that are possible within the technical ATC system, enroute network and procedural constraints.</p>	<ul style="list-style-type: none"> <li>- In terms of the 'noise' design principle theme, it is critical that noise impacts on local communities currently affected during final approach or immediate climb are properly mitigated. This is particularly important for noise sensitive areas and receptors. The overall provisions of refined design principles 5-8 are therefore welcomed. (East Dunbartonshire Council)</li> <li>- Would it read better if the word 'with' was taken out of the first section so that reads 'offer communities options'. (Environmental Protection Scotland)</li> <li>- Noise respite arrangements should be predictable and transparent for communities, airspace users and air traffic control so as to not create undue complexity. (Uplawmoor Community Council)</li> <li>- The respite requirements will need to be coordinated with NATS Prestwick to manage the interface with the En-Route Network. Designs would have to be discussed and agreed to ensure suitable compatibility with the En-Route Network. While options may be offered by Glasgow, without agreement from NATS Prestwick, options may be limited due to airspace constraints, safety or ATC system limitations. (NATS)</li> <li>- Additional airspace capacity should facilitate a reduction in the intensity of operations during more anti-social hours. The initial Summary of Feedback referred to anti-social hours as being "the evening and night-time period" We would request that this should also include the early morning period i.e. in advance of 07:00. (Uplawmoor Community Council)</li> </ul>	<p>Principle updated to remove the word 'with' and add the words 'predictable' and 'transparent'; to</p> <p><i>"Offer communities options for both noise concentration and noise dispersion through the use of predictable and transparent multiple route options and other respite methods that are possible within the technical ATC system, enroute network and procedural constraints."</i></p> <p>GLA will coordinate closely with NATS Prestwick regarding the interactions between potential respite options (below 7000ft) and the enroute network.</p> <p>Times of operations will be considered under the design principle description of "respite methods" during Stage 2.</p>
7	<p>The arrival and departure routes that serve Glasgow Airport below 7000ft should aim to avoid noise sensitive areas, buildings, national parks, areas of outstanding natural beauty and areas that are not currently affected by aircraft noise.</p>	<ul style="list-style-type: none"> <li>- It was stated that a trade-off between climbing quickly and turning early to avoid noise sensitive areas and buildings may be necessary. This is a very understandable principle and clearly implies that early turning which actually necessitates the overflying of sensitive areas should not be permitted when considering airspace design. The issue of low level turning appears to have been included in what is now point 7 in the refined list of design principles. It is however such an important point that I suggest that - low level turning on departures which necessitate the overflying of areas as described in the previous paragraph - cannot be part of the Glasgow Airspace Proposal and should be declared as such in the final (refined) list of airspace design principles. (Bearsden East CC)</li> <li>- It is considered that inclusion of the word "aim" in this principle is unnecessary and could potentially undermine efforts to ensure that future route options avoid all of the above noise receptors. Removal of the word "aim" would result in a stronger and more robust design principle that offers appropriate protection to noise sensitive receptors. The Council would therefore request that this design principle is amended accordingly. (East Dunbartonshire Council)</li> <li>- Scotland has a massive programme of house-building, particularly on 'brownfield' sites and the airport needs to take account of the impact that aircraft noise might have on the residents of future developments who could in the future be under flight paths. (Environmental Protection Scotland)</li> <li>- The Mains Estate Residents Association (MERA) fully supports this principle (MERA). MERA has highlighted that a particular noise sensitive building in Milngavie is Douglas Academy, within the Mains Estate. This secondary school serves as the national music school and its' location was specifically chosen to be quiet. MERA would like to see this building safeguarded in the design principles as a noise sensitive building. In addition, MERA has highlighted that the Kilpatrick Hills in West Dunbartonshire and East Dunbartonshire are statutorily designated a Local Landscape Area. Accordingly, MERA has proposed that there should be a presumption in the airspace design proposals against air departure routes overflying the Kilpatrick Hills Local Landscape Area below 7,000 feet (amsl). (MERA)</li> <li>- Following the submission of this Stage 1B report to CAA, the following clarification requests were received from CAA:                  DP says "Flight paths below 7000ft should aim to avoid noise sensitive areas, buildings, national parks and areas of outstanding natural beauty" – might read "noise-sensitive buildings"                  DP says "areas of outstanding natural beauty" – Scotland have National Scenic Areas, which are broadly the same as AONBs.</li> </ul>	<p>Principle updated to remove the word 'aim'; to</p> <p><i>"The arrival and departure routes that serve Glasgow Airport below 7000ft should avoid noise sensitive areas, buildings, national parks, areas of outstanding natural beauty and areas that are not currently affected by aircraft noise."</i></p> <p>GLA note the specific feedback points provided by community stakeholders that raise concerns about aircraft turning over noise sensitive areas while at lower altitudes and those that identify specific areas and buildings that should be taken into account during Stage 2. We believe that to make definitive statements precluding design options that include early turns cannot be fully discounted and should be considered as part of a balanced assessment. That said, we fully recognise the intent behind these comments and feel the design principle as amended reflects this.</p> <p>Principle updated to incorporate CAA clarification feedback following initial report submission to clarify that the reference to buildings is a reference to noise sensitive buildings and also to take account of National Scenic Areas:</p> <p><i>"The arrival and departure routes that serve Glasgow Airport below 7000ft should avoid noise sensitive areas and buildings, national parks, areas of outstanding natural beauty / National Scenic Areas and areas that are not currently affected by aircraft noise."</i></p>
8	<p>Mitigate the impacts on local communities that are currently affected by aircraft noise on final</p>		<p>No specific feedback received regarding additions or amendments to this principle.</p>

	approach or the vicinity of the immediate climb out, where overflight is unavoidable.		
9	Reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.	<ul style="list-style-type: none"> <li>- Suggest a change of wording to "Work to reduce complexity and remove existing bottlenecks into controlled and uncontrolled airspace and contribute to a reduction in airspace infringements." (Strathaven Airfield)</li> <li>- The Mains Estate Residents Association (MERA) full supports this principle. (MERA)</li> </ul>	No further updates proposed because GLA consider that the ambition to 'remove existing bottlenecks' suggested by Strathaven Airfield is encompassed in the principle as currently worded.
10	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.		No specific feedback received regarding additions or amendments to this principle.
11	Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to Flight Level 90.	<ul style="list-style-type: none"> <li>- Direct mention of a flight level to design to i.e. FL90 is outside of Glasgow Airport Airspace Responsibility and we requested that the use of preferred level coordinated with NATS Prestwick should be the preferred terminology. This provides greater flexibility to both Glasgow and NATS Prestwick. NATS would require this reference to a specific flight level removed until detailed designs are agreed. (NATS)</li> </ul>	Principle updated to remove direct reference to Flight Level 90 and add 'in coordination with NATS Prestwick'; to <i>"Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick."</i>
12	Minimise the growth in aircraft emissions, the further degradation in local air quality and adverse ecological impacts to address growing concerns about the impact of aviation on climate change.	<ul style="list-style-type: none"> <li>- UCC seek confirmation that any design principles for airspace design options should consider the broader impacts on the ecology of the region and the effects on non-human life. (Uplawmoor Community Council).</li> <li>- Additional airspace capacity should be used to facilitate a reduction in aircraft emissions for traffic operating into and out of Glasgow Airport (Uplawmoor Community Council).</li> </ul>	No further updates proposed because the feedback points offer specific guidance on aspects that should be examined when applying this principle to potential airspace design options.
13	Aircraft operating at Glasgow Airport should climb and descend continuously to / from at least 7000ft, with a preference for continuous climbs if both cannot be achieved simultaneously.	<ul style="list-style-type: none"> <li>- BALPA assume that there is no suggestion that one should reduce climb power in order to achieve continuous climb. We want to climb as quickly as we can to reduce the impact of noise. Continuous climb is nice to have but not so important as continuous descent. (BALPA)</li> <li>- The Mains Estate Residents Association (MERA) full supports this principle. (MERA)</li> </ul>	Principle updated to remove the 'preference for continuous climbs if both cannot be achieved simultaneously', in response to the conflicting feedback received from BALPA and other commercial airlines pending further analysis during stage 2 of the ACP process on the relative merits of GLA airspace design options featuring continuous climbs and descents and the aircraft fleet mix that will use them. <i>"Aircraft operating at Glasgow Airport should climb and descend continuously to / from at least 7000ft with a preference for the most environmentally beneficial option to be chosen if both cannot be achieved simultaneously."</i>
14	Routes should be designed to meet a RNAV1 specification as a minimum in order to gain maximum benefit of the performance capabilities of the modern aircraft fleet operating at Glasgow Airport and provide sufficient resilience and redundancy against Global Navigation Satellite System (GNSS) failure.	<ul style="list-style-type: none"> <li>- We requested that included within the Design Principles is a reference to CAP1385, this would ensure clear ownership and responsibility for design development and assurance of designs. This approach would ensure clear responsibilities between Glasgow and NATS Prestwick and avoid issues later in the design phases and is a key lesson learnt from other airspace changes NATS has been involved in during the last 5 years.</li> </ul>	Principle updated to include reference to CAA CAP1385 on Enhanced Route Spacing for Performance Based Navigation. <i>"Routes should be designed to meet a RNAV1 specification as a minimum in order to gain maximum benefit of the performance capabilities of the modern aircraft fleet operating at Glasgow Airport in line with the guidance provided in CAA CAP1385 on enhanced route spacing for PBN and provide sufficient resilience and redundancy against Global Navigation Satellite System (GNSS) failure."</i>
15	The GLA ACP accords with the CAA's published Airspace Modernisation Strategy (CAP 1711), any current or future plans associated with it and all other relevant policies and regulatory standards.	<ul style="list-style-type: none"> <li>- Airspace volume in line with the principles of the Airspace Modernisation (was FAS) principles the ACP must respect the requirement for minimum airspace volumes designed for efficiency and reduced environmental impact. (LAA)</li> </ul>	No changes proposed because the feedback points are sufficiently aligned with the principle as stated.

N/A	General feedback on all principles	<ul style="list-style-type: none"> <li>- Airspace4All Limited are broadly content with the design principles statements and welcome the approach taken by the airspace change sponsors to addressing the design of Glasgow’s airspace to meet the needs of all stakeholders. (Airspace4All)</li> <li>- The British International Freight Association confirm they are comfortable with the wording with the proposed design principles and not have any additional design principles they would like to see included. (BIFA)</li> <li>- The design principles have clearly been laid out and are written concisely and well. There is an easy to follow sub-group of themes which makes comprehension of what each design principle means easy. (Clydebank East CC)</li> <li>- Having participated fully in the engagement process up to this point, there are no additional design principles we wish to see included. There was a good summary of comments at each stage (via email), with clear explanation of how the concerns of each group have been addressed i.e. how and why they have been implemented to the refined design principles. (East Dunbartonshire Council)</li> </ul>	
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#### 4.4 Prioritisation

During round 2 of the engagement process stakeholders were asked which, if any, principles in should attract a relatively higher or lower priority in the context of the overall list of principles. This led to a relatively small number of responses on this topic (seven) which were considered polarised and therefore not sufficiently representative to determine a definitive prioritisation of the principles. It is for this reason that it is not deemed appropriate to carry forward any particular priority of one design principle over another (excluding DP1 and DP15 regarding safety and airspace modernisation). Instead, we will make trade-offs decisions based on an assessment of the overall impacts and two-way conversations with the affected stakeholders during stage 2 of the process.

#### 4.5 Final list of proposed airspace design principles

The final list of airspace design principles that we propose to adopt is set out again in table 29 (this table is a replication of table 1). The principles are numbered for ease of reference.

**Table 29: Final list of airspace design principles that GLA propose to adopt**

#	Airspace design principle
DP1	The airspace design and its operation must be as safe or safer than today.
DP2	Facilitate the growth in quicker, quieter and cleaner traffic by configuring the airspace to improve efficiency and meet the forecast demand for air transport.
DP3	Design the appropriate volume of controlled airspace to support commercial air transport, enable safe, efficient access for other types of operation and release controlled airspace that is not required.
DP4	Mitigate any future requirements for airborne holding for inbound traffic and holding on the ground pre-departure for outbound traffic.
DP5	Minimise the total adverse effects of aircraft noise and visual intrusion on physical and mental health and wellbeing.
DP6	Offer communities options for both noise concentration and noise dispersion through the use of predictable and transparent multiple route options and other respite methods that are possible within the technical ATC system, enroute network and procedural constraints.
DP7	The arrival and departure routes that serve Glasgow Airport below 7000ft should avoid noise sensitive areas and buildings, national parks, areas of outstanding natural beauty / <a href="#">National Scenic Areas</a> and areas that are not currently affected by aircraft noise.
DP8	Mitigate the impacts on local communities that are currently affected by aircraft noise on final approach or the vicinity of the immediate climb out, where overflight is unavoidable.
DP9	Reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.
DP10	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.

DP11	Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.
DP12	Minimise the growth in aircraft emissions, the further degradation in local air quality and adverse ecological impacts to address growing concerns about the impact of aviation on climate change.
DP13	Aircraft operating at Glasgow Airport should climb and descend continuously to / from at least 7000ft with a preference for the most environmentally beneficial option to be chosen if both cannot be achieved simultaneously.
DP14	Routes should be designed to meet a RNAV1 specification as a minimum in order to gain maximum benefit of the performance capabilities of the modern aircraft fleet operating at Glasgow Airport in line with the guidance provided in CAA CAP1385 on enhanced route spacing for PBN and provide sufficient resilience and redundancy against Global Navigation Satellite System (GNSS) failure.
DP15	The <a href="#">GLA ACP</a> accords with the CAA's published Airspace Modernisation Strategy (CAP 1711), any current or future plans associated with it and all other relevant policies and regulatory standards.

## 5. Independent assurance of design principles engagement

The Consultation Institute has overseen GLA's engagement on design principles, at Stage 1B of CAP1616 and endorses its approach. This has involved reflecting on the approach taken by GLA based on the advice the Institute has provided to it directly and to its sister airport within the AGS Group, SOU. We have also examined documentation, reports and other inputs, at each stage. We have not been able directly to observe any of the Workshops or the internal GLA decision-making processes.

Early in GLA's ACP we provided guidance based on The Consultation Institute's risk assessment methodology. Working at an arms-length distance with GLA the quality assurance is mainly retrospective. Throughout the process the main point of contact has been with BECG, GLA's engagement supplier. We have found the work of BECG to be thorough and robust.

The work previously conducted at SOU has provided GLA with a strong footing to ensure engagement activities were coherent and comprehensive, but there were clear differences in context of which GLA needed to be mindful, such as the previous ACP consultation in 2018 which generated controversy and much heated response; the geography and size of GLA; and the different political contexts.

For GLA we provided direct advice and guidance, signing off on the following elements:

- GLA Engagement Strategy
- Methodology
- Planning and timetabling of all activity
- Risk Register
- Documentation and reporting

For SOU we had provided direct advice and guidance and signed off on the following elements; this advice and guidance was then directly applied to GLA without intervention from the Institute:

- Objectives
- Target audiences (overview was provided in the GLA engagement strategy)
- Brief for research agency
- Detailed rationale for invitation of stakeholders
- Drafting of letters of invitation
- Approach to maximising attendance

The Institute is particularly pleased to see the application of the CAA feedback from the SOU Define Gateway submission applied to GLA's Stage 1B process. The Institute is satisfied that the approach taken aligns with our best practice standards and has been delivered with a high degree of professionalism. We believe that the responses and inputs from stakeholders at the workshops has been successfully captured in this report and the supporting documents; the resulting Design Principles therefore comply with the Statement of Need, and Engagement Plan, both agreed by the Airport.

## 6. Conclusion and next steps

This report was submitted to the Airspace Regulation (AR) team at the CAA on November 1<sup>st</sup>, 2019. The AR team will evaluate our approach to engagement with stakeholders to develop airspace design principles for our ACP in preparation for a Gateway Meeting on November 30<sup>th</sup>, 2019. Once the CAA confirm that our engagement is compliant with the regulatory guidance, our ACP will progress to Stage 2: Develop and Assess. Stakeholders that were invited to participate in the development of the design principles will be re-engaged at the start of Stage 2 to support the development of a comprehensive list of airspace design options and evaluate them against the design principles as part of the options appraisal process.

Our final list of proposed design principles has been developed and refined through two-way conversations with a wide mix of stakeholders that are potentially affected by the airspace change. The workshops that we organised brought together a mix of representatives from different backgrounds and with different interests. All workshops were attended by airport staff, technical specialists and third-party facilitators to ensure that our engagement in the ACP process was effective.

We would like to thank all stakeholders that gave their time to support the engagement process, consider the issues and opportunities associated with the airspace change and share their views on the development of the design principles. We feel that the engagement has provided us with a good understanding of the local factors that are most important to different stakeholders when developing airspace design options for the ACP. We expect that our engagement during the options development and assessment stage, and in the later public consultation, will be more constructive because of the outputs of the design principle engagement.

We understand that there will never be unanimous agreement on all of the principles that we propose to adopt, or the airspace design options they may be used to evaluate. We also acknowledge that some of the principles may at times come into conflict with one another and difficult trade-offs may need to be made. We are committed to continuing a transparent two-way process of engagement as the ACP progresses, which we expect will help to inform these trade-off decisions when they emerge.

If stakeholders would like to view all the Stage 1B submission documents associated with this report and track the progress of our ACP, they can be viewed by searching for 'Glasgow Airport' on [airspacechange.caa.co.uk/](https://airspacechange.caa.co.uk/) and keep up to date on our website [www.glasgowairport.com/airspace](https://www.glasgowairport.com/airspace)